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America's Contributions and Problems in Public Health*

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THE term "America" as employed in my paper refers to the countries included in the American Public Health Association, namely Cuba (1902), Mexico (1891), Canada (1884), and the United States (1872). Five annual meetings have been held in Canada, two in Mexico, also a post-convention meeting, and two in Cuba. Canada has supplied five presidents, Mexico two, and Cuba one. The United States, being most centrally located, has furnished the remaining meeting places and presidents. The sixty-second annual session of the Association is being held in Indianapolis. It is the third meeting held in this city.

The first was held in 1882 and the second in 1900. That beloved Canadian, Dr. Peter H. Bryce, who founded the Ontario Department of Health and rendered other valuable services to the cause of public health, presided at the meeting in 1900. It was a historic occasion because Dr. Walter Reed then presented a paper entitled "The Etiology of Yellow Fever. A Preliminary Note," in which he convincingly established the fact that the mosquito transmits the disease. Thus the way was opened for the rational control procedures that proved to be effective in Havana in 1902, New Orleans in 1905, and Rio de Janeiro in 1908, and made possible the construction of the Panama Canal (1904–1914). The last outbreak in the United States occurred in New Orleans in 1905 and the last in Mexico in the state of Veracruz, in 1922.

After the studies in Cuba and the control work just mentioned, a number of years elapsed before yellow fever was further studied and widely and systematically controlled. Americans, not content with its status, particularly in the equatorial zone, instituted investigative and control measures on an international scale. Mainly through the initiative of the International Health Division of the Rockefeller Foundation, and largely with its funds, these measures have continued for more than 15 years. Among the advances that have been made, I may mention that yellow

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fever has been definitely proved to be a virus disease; a successful method of producing immunity and a reliable test of immunity have been developed; erroneous ideas as to the prevalence and distribution of yellow fever and as to the character of measures necessary for its control have been corrected; and the disease has been driven from North America and checked in a number of endemic centers of South America, and systematically studied for several years in South America and West Africa.

It is particularly fitting, therefore, that the feature of this meeting should be a session in memory of Walter Reed and his colleagues at which the historic events relating to yellow fever may be reviewed. The tributes should include Carlos J. Finlay, a Cuban physician, who advanced the theory that yellow fever is transmitted by the stegomyia mosquito. Dr. Finlay was president of this Association at the annual meeting held in Havana in 1904.

The indispensable reference book entitled *A Half Century of Public Health*, was published by this Association in 1921. It is one of the important contributions of Dr. Mazÿck P. Ravenel that made notable his presidency of the Association in 1921. Seventeen other authorities collaborated with him in reviewing the developments of all phases of Public Health in America for the first 50 years of the Association's existence. Any attempt I might make on this occasion to cover the same ground would be futile.

Moreover, it would be impracticable for me to review all of the important individual and group contributions to the advancement of public health made by members of this Association since 1921. I shall, therefore, limit my discussion to a few of the major movements in the advancement of public health that have been distinctively American.

During the period 1850 to 1900, the discovery of the causal organism of one disease after another was laying the foundation for scientific medicine and public health. The list of discoverers was made up mainly of Europeans. However, during the past three decades Americans have been prominent among the discoverers in etiology, serology, and other branches of science that have supplied a basis for developing sound control measures. For about 30 years after a considerable amount of knowledge as to the etiology of various diseases became available, there was apathy on both sides of the Atlantic in applying this knowledge. Finally, however, the movement got under way in America. The early steps were characterized by the establishment of boards of health (Massachusetts 1869; California and Virginia 1871; District of Columbia 1870). New York City's Department of Health was established in 1866 and by 1873 there were 134 cities which had some form of health service.

However, bacteriology did not generally afford a foundation for sound, scientific control procedures until the beginning of the present century, although New York City established a vaccine laboratory in 1874, Providence a diagnostic laboratory in 1888, and New York City a laboratory for diagnosing tuberculosis in 1893 and diphtheria in 1895. The production of antitoxin in the New York City laboratory in 1895 led to the first real check of a diphtheria rate which for years had been steadily rising. A drop of 33 per cent in the death rate in one year from diphtheria in New York City was an event of historic significance. From 1900 on America has steadily gained ground as a leader among the nations in the application of knowledge to the control of disease.

Through its effort at popular education of the masses in matters of hygiene and public health, America again has ex-

cited the interest and respect of health authorities of other countries. The official health agencies have established their educational divisions which have utilized the printed pages of magazines, newspapers, bulletins, and leaflets. The radio has been extensively employed. School teachers have been instructed. Courses in hygiene have been given in colleges, high schools, and grammar schools. Manufacturers and merchants have used labels and advertisements to capitalize the popular interest in health practices. The health officer, nurse, and inspector have carried the gospel of health to the home, the school, and the clinic. This movement in many localities has been stimulated and even initiated by nonofficial health organizations. Many of the European health officials visiting in the United States and Canada have been deeply impressed by the extent to which information about hygiene and public health has been disseminated among the masses. In popularizing public health knowledge this Association and its membership have made an important contribution.

Another American contribution to public health progress has been the private or unofficial health agency. In the United States alone there are probably over 100 of these agencies operating on a nation-wide basis. Most of them have a special interest or problem, which may be a single disease, as is the case with the National Tuberculosis Association, or a group of diseases, as in the program of the American Social Hygiene Association; or a particular age group, as the American Child Health Association. There are national organizations for the conservation of vision, for the promotion of mental hygiene, and for many similar objectives. These organizations have state and local branches.

Again, there are foundations either operating in the health field or supplying funds for such work to other, usually governmental, health organizations. Certain ones do both. In connection with our foundations and other philanthropies, I might state here that large gifts of money for the advancement of all phases of public health were first made by Americans.

These various unofficial agencies have coöperated with the official agencies by supplying some of the funds for special activities, such as research, demonstrations, and training. They have encouraged the employment of professional personnel, the enactment of progressive legislation, and provision of increased health appropriations. When they have inaugurated new services, they have been glad, as a rule, to have the governmental organizations assume as quickly as possible complete administrative and financial responsibility for the maintenance and expansion of the work. Many of the projects were experimental in character and could not in the beginning have been financed with public funds. Thus the official health organizations have been stimulated, aided, and enlarged by these private agencies, and many advances in knowledge and practice have been developed much sooner than would have been possible had the official agencies been working alone.

Although the influence of the voluntary health agencies in the advancement of public health in North America has been great, a question has arisen as to whether their existence may not at times have afforded too great a feeling of safety, thus delaying appropriations for the official agencies and retarding their growth. The reverse opinion is commonly held in public health circles, but no one will deny that there may have been instances when a personally ambitious employee of a private agency may unwittingly or unwisely have worked in competition with the official organizations, but such conduct cer-

tainly would not have the approval of a recognized national, unofficial, health association.

America has contributed the university school of public health. Certain universities, colleges, and medical schools had previously offered courses in preventive medicine and public health. But we are referring to definite schools with faculties concentrating on the field of public health and with courses and teaching organized entirely from the public health point of view. In this class may be mentioned the School of Public Health of Harvard-Technology, which admitted its first class in 1914 and operated through the school year 1920. Johns Hopkins University School of Hygiene and Public Health admitted its first class in 1918. This was followed by the Harvard School of Public Health in 1922 and the University of Toronto School of Hygiene in 1927. Other schools or institutes of public health have since appeared in various countries. In establishing schools of public health on a plane corresponding with other professional schools, such as medicine, law, and engineering, America has definitely advanced the cause of public health.

In developing a fruitful method of study, Dr. Charles V. Chapin made a notable contribution to the advancement of knowledge and to its application which is a credit to America. During the long period in which he supervised health work in Providence, incidental to the effective conduct of routine activities, he carried on studies regarding the efficacy of measures for dealing with infectious diseases and introduced new practices based on new knowledge. He was the first to discontinue the ineffective and expensive practice of terminal disinfection and to direct health measures against persons rather than things. I have singled him out because he introduced a scientific method of appraisal which has enabled all competent health officers systematically to improve the quality of their services.

For the health protection of its population America in general provides a safe supply of water and milk. In all populous centers and even in towns of from 1,000 to 5,000 population, the water supply is chlorinated and otherwise treated to make it safe. In all cities and larger towns milk is obtained from tuberculin-tested cows and is pasteurized. Its production and distribution are made to conform to the standards recommended by this Association. The same standards of safety are enforced on the common carriers and in other interstate traffic.

The difference between the bacilli of bovine and human tuberculosis was discovered in 1896 and 1898 and the transmissibility of bovine tuberculosis to man was discovered in 1902, both discoveries being made by Americans. Subsequently systematic control measures have contributed greatly toward diminishing bovine tuberculosis in America and toward making our milk supply safe. Health officers, sanitary engineers, bacteriologists, chemists, and veterinarians have all shared in these notable achievements. There are few places in the world where the traveler on train or boat, and in hotels and restaurants can eat and drink with as much safety against enteric and other diseases as in Canada and the United States. The chlorination of water and the pasteurization of milk are among the distinct advances in health practice which were first extensively applied in America.

The sanitary engineer has become an indispensable part of all well-rounded health organizations. Degrees in sanitary engineering have been awarded for many years by university schools of engineering which have organized courses designed to equip the sanitary engineer for the wide range of activi-

ties in his field. Practically every state, province, and city is now employing in its health department one or more graduate sanitary engineers. The engineer functions mainly in the field of environmental sanitation. In designing, building, supervising, or passing upon plants for purification of water and for the sanitary disposal of sewage; in matters of drainage, housing, dairying, and ventilation, he plays a very important rôle. He has many achievements to his credit and his work in America has been observed with interest by health authorities from other quarters of the globe. Sanitary engineers have their own society and through their own section are active in the work of this Association.

Public health nursing, which has become a vital factor in the conduct of public health work, is also essentially an American movement. Its influence in the public health field is fairly recent, but the growth has been rapid. Already public health nurses far outnumber any other class of health personnel in the field services of official and voluntary health agencies. The range of health activities in which they participate is extremely broad, and the quality of the service which they render is rising steadily.

The leadership in the public health nursing movement has been aggressive. Competent supervisors who direct and teach the field nurses have served to increase efficiency. Foremost among the achievements has been the establishment of persistently rising eligibility standards. University courses in public health nursing have been established, and the number of students taking the courses has steadily increased. Public health nurses have their own organization and journal. Through the section on public health nursing they share in the activities of this Association. In the development and extensive utilization of the public health nurse in the health field, America has been a pioneer.

The important movement toward the establishment of local health service during the past two decades has been of American origin. After the new era for applying modern knowledge to the conservation of human health was well under way in the urban areas, attention was turned to the balance of the country which embraced the towns, villages, and sparsely-settled areas.

Between 1910 and 1915 the warfare against hookworm disease, typhoid fever, and other filth-borne diseases led logically to a movement to supply non-urban areas with creditable full-time health services, usually in the shape of full-time county health units. As was the case in urban organizations, the health officer, nurse, and sanitary inspector conducted the field activities. Except for a few of the stronger county organizations serving both urban and rural areas, the technical experts for laboratory, sanitary engineering, epidemiological and other services have been supplied to the local organizations by the state health departments which frequently likewise furnished administrative and financial coöperation. This movement has steadily gained ground until it now embraces nearly 20 per cent of the counties and 35 per cent of the non-urban population of the United States. In Canada and Mexico the movement has also made striking headway, which will be reported at this convention in the Health Officers Section by health officials from each of these countries. Its logical extension to a basis of adequacy will occupy the public health forces for many years to come.

In seeking to make health work a full-time, professional occupation for all classes of health workers—administrative and technical—the American Public Health Association and the American universities have set a high standard. In 1922 the Association definitely de-

cided that it was to be an organization of professional health workers and not merely a popular health association with a large part of its membership composed of persons not actually engaged in or even indirectly identified with health work. Since that time a Committee on Fellowship and Membership and another on Training and Personnel have furthered the movement for professional standards. The Committee on Training and Personnel encouraged the unification of public health courses and degrees and published a directory of professional health workers. A year ago the committee was reorganized, its name changed to the Committee on Professional Education, and its scope broadened. Among the new lines of activity which the committee contemplates adding to the existing program is the promotion of state and national eligibility standards in regard to training and experience for the positions in health organizations.

In legally requiring a diploma or certificate in public health for its medical officers of health, Great Britain has taken the lead, but in many countries health service is regarded as a part-time occupation for which special training is not usually required. In America the full-time principle has been established in national as well as in progressive state, city, and county health services, and the percentage of health workers who have taken special training for their duties is steadily increasing. Although the progress thus far made must be regarded as an important contribution, I shall later on in this paper have to list the completion of this task as one of America's important problems in public health.

Among the contributions of this Association, its standard methods take a high place. First came a standard method for the differentiation of bacteria, adopted in 1898. Next came the standard methods for the examination of water and sewage. Then followed standard methods for the examination of milk in 1910, of air at about the same date, for the pasteurization of milk in 1920, and finally, through the Committee on Administrative Practice, standard methods or forms for the survey and appraisal of state, city, and county health organizations.

Through the efforts of members of this Association, there has been published by the U. S. Public Health Service during the past decade a survey of the health departments of the 100 largest cities of the United States, a survey of the state and provincial departments of health, and other publications which afford the health executives guidance in modern methods of organization, administration, and practice.

Each standard method has been prepared by the most expert talent available in the membership of the Association. Each has embraced the newest and most reliable information on advanced practice to be found anywhere in the world. From time to time as new knowledge and experience warranted, each standard method has been revised and brought up to date. In this way the Association has supplied the health workers in its membership, and indeed those of the world, with sound, reliable methods for carrying on their work. The contribution of Standard Methods by this Association has been of fundamental importance in the advancement of public health.

The American Public Health Association embraces every important administrative and scientific subject closely related to hygiene and public health. The scope of its activities has greatly expanded during the 62 years of its existence. Knowledge of bacteriology reached a point in 1899 which warranted the formation of a section, which concerned itself with bacteriology

and chemistry. Later this became the Laboratory Section.

Prior to the formation of sections, the meetings as a rule were made up of general sessions. The subjects of the papers to a large extent reflected the particular interests uppermost at the time in public health circles. In the early period before the mode of spread of diseases was established, attention was too often directed to things rather than to persons. Odors, such as that of sewer gas, for example, that now would be classed merely as nuisances, were of deep concern. An epidemic of cholera, yellow fever, or plague naturally caused much excitement and confusion.

The special interests of groups in each division of the health field led gradually to the formation of other sections until, as you have no doubt noted from our program, there are now 10 sections. In order to cover the present wide range of health subjects of vital interest, there is a program for each section, and besides there are general sessions for subjects too broad or too urgent to be left to a single section. The development of such an organization for the advancement of public health on a broad and comprehensive scale is in itself an important contribution to the cause of public health.

The Chairman of the Executive Board will present at this convention a detailed report of the past year's work of the administrative and clerical staffs of the Association, and of the status of membership, finances, and activities of the committees. Beyond casual references, it will not be necessary or feasible for me to dwell upon these topics. Moreover, as this brief presentation of twelve of the major movements in the advancement of public health in America has practically consumed the time at my disposal, I regret I cannot mention many notable contributions to public health that have been made by individual members, committees, or agencies affiliated with this Association. I must not, however, close this paper without calling to your attention a few of the most vital problems which challenge the best efforts of this American Association.

The restoration of health appropriations and salaries, at least to the pre-depression status, and the reëmployment of qualified personnel now unemployed are urgent problems. Losses in funds for public health and in personnel that had occurred before the close of 1932 were distressing but the climax of the depression with its panic and hysteria was not reached until the early part of 1933. Then in at least five-sixths of the states and provinces legislatures convened and often the slashing of appropriations for all purposes was carried on indiscriminately. Although reductions for health services seldom, if ever, exceeded those for other governmental purposes, and in many cases were much less, some states, nevertheless, were left with a bare skeleton of the essentials of an adequate health service. To omit measures for the protection of health at a time when government in all its branches is having to appropriate stupendous sums for emergency relief is extremely illogical. It is the result of fear or panic and not of sound reasoning. The extent of the reduction in health appropriations varies widely. In a few states and cities it has not exceeded 10–15 per cent, but in many others it has been as much as 60–75 per cent. Now that a basis for calm consideration of corrective measures seems to have returned, the public health forces should inaugurate a campaign calculated to lead taxpayers and their representatives on appropriating bodies at least to put the public health status back to where it was prior to the depression.

In spite of the progress already made, the professionalization of public health personnel remains a vital problem for

America. The extent to which routine, administrative, and investigative problems can be handled by competent, professional workers will determine to a large degree the progress to be made by the health forces. The excellent committee assigned to this problem hopes to give guidance to the public and particularly to boards of health and executives as to suitable eligibility standards for personnel. Moreover, it seeks to be helpful to colleges and universities in laying out courses for the various types of service, and to aid those desiring to take special training. With the necessity for professional training recognized in all circles, and with a reserve of qualified personnel available so that any excuse for employing untrained persons is removed, the future advancement and efficiency of health service should be assured.

Another problem to which the Association has definitely committed itself is the enlargement of knowledge and the perfecting of technical methods. A major committee on research and standards is already functioning. It seeks to stimulate research by individuals, groups, and agencies, to keep the standard methods of the Association up to date, and to promote the development of other standard methods as occasion warrants. The acquisition of new knowledge, the supplementing and rounding-out of present knowledge, and the dissemination of the knowledge we already have for the use and guidance of health organizations constitute a problem of the first magnitude, which should engage all resources that can be enlisted.

The wider and more intensive application of knowledge already available is a major task confronting the health forces. It involves the development of health organizations, the securing of appropriations and legislation, the formulation of programs, and the conduct of field operations. The work must be productive and efficiently carried on if the health authorities are to be guided and if the confidence of the taxpayer is to be held. In this field of administrative practice the Association already has at work a large committee of authorities and a full-time staff. The work, which has been curtailed because of a reduction in income, includes nevertheless many admirable achievements, among which may be mentioned the health conservation contests for cities and the surveys of many health departments of states, cities, and counties. To carry forward effectively this work in the field of public health administration is a task to which the Association, individuals, and corporations may well give aid.

The publications of the Association constitute the tangible consideration returned to members for their dues. They are the historical record of the administrative, investigative, and lifesaving activities of American health forces. They are the media through which the world can learn of and benefit from American developments in public health. Shortage of funds has prevented the publication of many valuable manuscripts. To enlarge these publications, to make them more adequately supply up-to-date information to the membership of all 10 sections, is a problem which the Association must meet. The item of funds presents a difficult problem. If a large part of the membership dues could be applied to the cost of publications, the matter would be simple. In order to do this, new sources of funds for financing other expenses will have to be found. The Committee on Meetings and Publications, in the face of a serious, financial handicap, has been remarkably successful in holding excellent meetings and in issuing an authoritative and useful *Journal*.

The membership and fellowship of the Association should be enlarged and

the qualification standards for membership and fellowship should be maintained. The fifth major committee, that on Fellowship and Membership, is struggling with this problem. It passes upon eligibility for each class of membership and endeavors to bring into the Association all professional health workers who are eligible. This committee has worked with diligence and intelligence and yet within the past year there has been a falling-off in membership. The following record shows the losses of the past year:

	Members	*Fellows*	*Miscellaneous*	*Total*
August 1, 1932	3,503	857	355	4,715
August 1, 1933	3,159	847	299	4,305
Decrease in number	344	10	56	410
Decrease in percentage	9.8	1.1	10.7	8.6

When, however, we consider the drastic depression, the curtailment of health appropriations, the reduction of salaries (which even before the depression were quite meager), and the actual unemployment of qualified workers, the situation in regard to membership in the Association is gratifying. With the gradual elimination of the untrained political appointees, and those serving on a part-time basis, whose chief interests are in other fields, I believe the Association's membership will embrace nearly all health workers who can qualify for membership.

The final problem to which I wish to invite your attention relates to adequate financing of the important activities of the American Public Health Association. With fellowship and membership limited to professional health workers, and with due consideration for the extremely small salaries in the health field, it is obviously impossible for the members, through dues, to finance all the work which the Association should carry on. The need of an endowment to cover at least a part of the Association's legitimate operating expenses has been discussed from time to time at the meetings of the Governing Council and the Executive Board. The task is still ahead of us. Although the present time may not be auspicious for actually raising an endowment, plans for one should be formulated and systematically carried forward until the objective is attained.

Of the seven important problems presented to the forces of which this Association is composed, the most acute is the one which relates to the early restoration of health appropriations and the reëmployment of trained workers so that the notable gains in the field of public health which were made before the depression may be held and systematic progress may again be resumed.

Committee on Professional Education

THE following tables similar to those published in previous years present the data concerning students registered in schools of public health, and the public health degrees granted in the calendar year 1933.

COLLEGE ENROLLMENT IN PUBLIC HEALTH COURSES

The number of students enrolled, and Public Health Degrees conferred in the year 1933 in courses requiring at least 1 year of residence, by American and Canadian Colleges, is shown in Table I.

TABLE I

Name of University	*No. of Students Registered 1932–1933*			*Degrees Offered*	*No. of Degrees Granted 1933*		
	Men	*Women*	*Total*		*Men*	*Women*	*Total*
University of California	1	15	16	A.B.		1	1
				M.A.			
				Dr.P.H.			
Columbia University	4	4	8	M.S. in P.H.	5	2	7
Detroit College of Medicine and Surgery	3		3	Dr.P.H.	1		1
Harvard School of Public Health	22		22	C.P.H.*	8	0	8
				Dr.P.H.	2	0	2
				M.P.H.	11	0	11
Johns Hopkins School of Hygiene and Public Health	97	59	156	Dr.P.H.	3	0	3
				Sc.D. in Hyg.	11	2	13
				Sc.M. in Hyg.	1	7	8
				C.P.H.	40	1	41
Massachusetts Institute of Technology	85	15	100	S.B.P.H.	13	0	13
				S.M.P.H.	1	0	1
				Ph.D.	1	0	1
				C.P.H.		9	9
University of Michigan	46	35	81	M.S.P.H.	7	9	16
				D.P.H.	2		2
University of Minnesota	5	7	12	B.A.			
				M.A.	3		3
				M.S.			
				Ph.D.		1	1
University of Pennsylvania	12	2	14	M.A.	3	0	3
				M.S.	1	0	1
				Ph.D.	1	0	1
University of Toronto	12	0	12	M.A.	1	1	2
				Ph.D.	0	0	0
				D.P.H.	10	0	10
University of Western Ontario	0	0	0	D.P.H.	0	0	0
Yale School of Medicine	20	10	30	C.P.H.	3	3	6
				Ph.D.	3	1	4
				M.S.	0	1	1
				Dr.P.H.	3	0	3
Total	307	147	454		134	38	172

* Harvard does not give the C.P.H. as a degree.

CLASSIFICATION OF PUBLIC HEALTH DEGREES GRANTED IN 1933

The number of persons receiving college degrees by reason of public health courses taken, classified according to the nature of the degree conferred is shown in Table II.

TABLE II

Degree	*No. of Degrees Granted*	*No. of Schools Offering Degrees*
Certificate of Public Health	64	4
Doctor of Public Health	9	5
Master of Science in Hygiene	8	1
Doctor of Science in Hygiene	13	1
Doctor of Philosophy	7	5
Bachelor of Science	13	1
Bachelor of Arts	1	2
Master of Arts	8	4
Master of Science	3	4
Master of Public Health	34	1
Diploma of Public Health	12	3
Total	172	

Number of Degrees conferred by American and Canadian Colleges for 1931, 1932, 1933, is shown in Table III.

TABLE III

School	*Degree*	*1931*	*1932*	*1933*
University of California.	A.B.	4	3	1
	M.A.	0	0	0
	Dr.P.H.	1	0	0
Columbia University	M.S. in P.H.	1	6	7
Detroit College of Medicine and Surgery	Dr.P.H.	0	0	1
Harvard School of Public Health	C.P.H.*	..	4	8
	Dr.P.H.	1	0	2
	M.P.H.	13	7	11
Johns Hopkins School of Hygiene and Public Health	Dr.P.H.	15	5	3
	Sc.D. in Hyg.	19	12	13
	Sc.M. in Hyg.	3	1	8
	C.P.H.	32	33	41
Massachusetts Institute of Technology	S.B.P.H.	16	9	13
	S.M.P.H.	2	3	1
	Ph.D.	0	1	1
	C.P.H.	4	0	9
University of Michigan	M.S.P.H.	4	17	16
	Dr.P.H.	1	3	2
University of Minnesota	B.A.	..	..	..
	M.A.	..	1	3
	M.S.	2	1	..
	Ph.D.	..	..	1
	Dr.P.H.	1	..	..
University of Pennsylvania	M.A.	2	4	3
	M.S.	7	..	1
	Ph.D.	1	1	1
	Dr.P.H.	1	0	..
University of Toronto	M.A.	..	..	2
	Ph.D.	..	..	0
	D.P.H.	13	14	10
University of Western Ontario	D.P.H.	0	0	0
Yale School of Medicine	C.P.H.	6	2	6
	Ph.D.	6	6	4
	M.S.	2	0	1
	Dr.P.H.	2	0	3
Total		159	133	172

* Harvard does not give the C.P.H. as a degree.

Number of Degrees in Public Health Granted in United States and Canada, 1931, 1932 and 1933:

TABLE IV

Degree	*1931*	*1932*	*1933*
C.P.H.	42	39	64
Dr.P.H.	21	5	9
M.S. in Hygiene	3	1	8
Sc.D. in Hygiene	19	12	13
Ph.D.	7	8	7
B.S.	16	9	13
B.A.	4	3	1
M.A.	2	5	8
M.S.	18	27	26
M.P.H.	13	7	11
D.P.H.	14	17	12
Total	159	133	172

Italian Mutual Benefit Funds in Elementary Schools

A RECENT Italian decree gives effect to a law passed in 1929, establishing mutual benefit funds in the elementary schools throughout the country. Membership in the funds is compulsory for teachers and optional for pupils. The funds are intended to pay for medical care in case of illness and also for preventive measures, such as periodic physical examinations, open-air schools, school clinics, ultra-violet ray treatments, rest homes, vacation colonies, and school lunches. The dedecree requires that the school children be given instruction in the rules of personal hygiene and the principles of social insurance.

The dues are to be 10 lire annually; in exceptional cases they may be reduced to 6 lire. The dues for poor children may be paid by child welfare agencies. Part of the amount paid by each pupil is transferred to the invalidity and old age insurance fund, membership in which is compulsory for nearly all wage earners in Italy, and is credited to the pupil when he reaches the age of 20 and becomes subject to the compulsory insurance. In the case of persons not subject to old age insurance the money is placed to their credit in a Government savings bank.

For the administration of the law there will be established a "National Office of School Mutual Funds," with provincial and municipal branches.—*Ministero dell' Educazion Nazionale, Bolletino Ufficiale,* Rome, No. 14, 1933.

The Work of Walter Reed and His Associates of the Medical Department of the United States Army*

MAJOR GENERAL ROBERT U. PATTERSON
The Surgeon General, United States Army, Washington, D. C.

YELLOW fever is a disease of great interest to medical officers, not only on account of its military importance, but because of the epochal work in its control that has been done by officers of the Medical Corps of our Army. That fine old military surgeon and signer of the Declaration of Independence, Benjamin Rush, a Physician General in our Revolutionary Army, wrote in 1793 an account of his work in fighting the epidemic of yellow fever in his native Philadelphia which even today is unapproached for its realism. The part that he played in this epidemic was an important one, and if he had never done anything else, would have earned him a place among pioneers in preventive medicine.

In 1820 Surgeon's Mate Merrill of the 8th U. S. Infantry, outlined a new treatment for the disease, which, while perhaps not in keeping with modern clinical methods, at least had the merit of giving great relief to the sufferers in comparison with the extensive venesection and massive doses of purgatives that had been used up to that time.

When Carlos J. Finlay of Cuba stated his theory of the insect transmission of yellow fever in 1881, a real step forward was made, and his chief, that distinguished scientist, Surgeon General Sternberg, realizing the desirability of special training in methods of research, sent Major Walter Reed to Johns Hopkins to study pathology under Welch.

During his tour of duty in Baltimore Reed made an important contribution to the pathology of the liver in typhoid fever. In April, 1899, he showed that *B. icteroides* (Sanarelli) was really a variant of *B. cholerae* suis (hog cholera), and if found in yellow fever existed only as a secondary invader. Following the Spanish-American War, in which there were more than 20,000 cases of typhoid fever, though battle casualties numbered only 350, a board of officers was appointed to study the cause of the epidemics. The board consisted of Major Walter Reed, Major Victor C. Vaughan, and Major Edward O. Shakespeare. There is an army saying that boards are long, narrow, and wooden, but this one was not of that character, for its findings have been of inestimable value by contributing to our knowledge of means for the preservation of the public health.

As is well known, the board found that more than 90 per cent of the volunteer regiments developed the disease within 8 weeks after going to camp; that typhoid fever is disseminated by the transference of excreta of infected individuals to the alimentary tracts of

* Delivered at the Special Memorial Session to Dr. Walter Reed and his Associates on the Yellow Fever Commission at the Sixty-second Annual Meeting of the American Public Health Association in Indianapolis, Ind., October 11, 1933.

others; that camp pollution was a more prominent causal agent in this instance than contaminated water supplies; that the disease was largely spread by flies and the hands of human carriers. Contrast for a moment the conditions which prevailed in the World War, when thanks to prophylaxis and improved sanitation, instead of the half million cases of typhoid fever which would have occurred had the rates of the Spanish-American War period prevailed, there were only 1,572 out of more than 4,000,000 men who served with the colors.

In 1900 Walter Reed was detailed as the head of what is probably the greatest of all army scientific boards. It was to pursue "scientific investigations of acute infectious disasters in the Island of Cuba," and "to give special attention to questions relating to the etiology and prevention of yellow fever." The latter disease was still thought by many to be caused by the so-called *Bacillus icteroides* of Sanarelli. Sternberg's selection of Reed for this important duty is an indication of his appreciation of his abilities. Sternberg's own great contribution to our knowledge of yellow fever was his refutation of the mistakes of other workers, and the indication that the causative microörganism was not to be found by ordinary bacteriological methods.

Reed went to Cuba in June, 1900, accompanied by his assistant, Major James Carroll. The other two members of the commission were already there, Assistant Surgeon Aristides Agramonte and Dr. Jesse W. Lazear, who had made special studies of the disease at Johns Hopkins and in Italy with Sanarelli.

An intimate friend of Reed's tells us that at the first meeting of the commission in August, 1900, four interlinking facts were considered. First, was Ronald Ross's announcement in July, 1898, of the discovery of the transmission of malaria by mosquitoes. Second, there was the thorough cleaning which the American administration had given to the city of Havana, without in any way improving the yellow fever situation, thus apparently eliminating the question of its being a filth disease like typhoid fever. Third, there was the publication by Dr. Henry R. Carter of the U. S. Public Health Service in May, 1900, of his excellent epidemiological observations on the disease, observations which in the light of Ross's work pointed toward insect transmission. And finally there was the widely accepted belief in Havana that yellow fever was transmitted by the bite of a special mosquito. Dr. Carlos J. Finlay, a native of the West Indies, though born of Scottish and French parents, had for 20 years (*i.e.*, since 1881) argued upon epidemiological grounds that yellow fever was transmitted by the common household mosquito.

The first important contribution of the board was to demonstrate that the blood (during life) of 18 well marked cases of yellow fever (4 of them fatal) did not show the presence of the so-called *B. icteroides* of Sanarelli. Nor did cultures from the blood and viscera after death in these cases yield *B. icteroides* nor any growth or organism. In most instances nearly all cultures were negative. This finally disposed of *B. icteroides* as a causative factor in yellow fever.

At the very outset of their work Reed was called to the United States by the death of Major Shakespeare, and he had to rescue the records of the typhoid board. By the time he got back to Cuba a month later, Major Carroll and Private Dean of the Cavalry (known in the records as XY) were convalescent from experimental yellow fever, and Lazear was dead. Though not generally known, Lazear's case was also experimental.

These experimental cases occurred

just as the board was all but ready to reject Finlay's theory, for nine times they had failed to convey the disease by mosquito bites. The reason is now clear to us though then unsuspected by them. The disease was not so transmitted either because of failure to allow the mosquito to bite the ill person sufficiently early in the disease to acquire the infective agent, or a failure to keep the mosquito sufficiently long after it had ingested blood from a case, before permitting it to bite the experimental subject, so that the virus did not have the opportunity to undergo the necessary development within its body to become capable of transmitting the disease.

The experiments of the Reed commission are graphically described after the manner of a detective story by Professor Turner and Miss Hallock. In seeking the hidden criminal, the producer of the dreaded "Yellow Jack," the master detective and his assistants had presented to them six clues. The first clue was that most accounts of yellow fever mentioned the presence of mosquitoes in numbers. Thus the "suspect" was at the scene of the crime. The second clue was that the epidemics started in low wet regions or near the docks. As the mosquito breeds in water, here was another ground for suspicion. The third clue was that in high, dry parts of a city the disease was not contagious. Though people from the low-lying sections fled to the higher parts of a city, and might come down with yellow fever after arriving there, the disease did not spread to other people in the new neighborhood. Thus our detectives realized that the disease must be carried in some other way than directly from one person to another. Other detectives had realized this, but most of them jumped to the conclusion that this could only indicate that the disease must be present in the *air* of certain districts and not others. The fourth clue seemed to strengthen the idea that the disease was air-borne. It had been noticed that it spread in the direction of the prevailing wind. As the mosquito is a great lover of home, it never travels far except when carried along by the wind, or a ship. The fifth clue lay in the observation that yellow fever flourished in hot weather, but disappeared with frost. Until our sleuths suspected the mosquito, this clue was lost on the detectives because they concluded merely that heat was a common exciting cause of the disorder. The sixth clue, one which was not discovered without careful study, was that for 15 days after a patient had come down with yellow fever his house was not infected, for people could come and go without getting the disease. But after 15 days any non-immune who would go there would take the disease in from 1 to 6 days. Reed suspected that the deadly microörganisms of yellow fever were, during this 15-day period, hidden away within the body of the villain of the play, the mosquito. This villain had a bad reputation, and had long been suspected, but it was not easy to prove the suspicion to be true.

In every well ordered detective story it is necessary not only to prove the villain guilty, but the other suspects must be proved to be innocent. In 1900 it was accepted by almost everyone that yellow fever was carried by *fomites*, that is, excretions of yellow fever patients on clothing, bedding, etc. Much valuable property was destroyed in this belief. Volunteers, under Reed's directions, slept in a poorly ventilated room, specially constructed and heated to 90° to simulate the conditions in the hold of a vessel in the tropics, making their beds with piles of sheets, pillow-slips, blankets, etc., which had been contaminated by yellow fever patients. For 20 nights three non-immune volunteers slept in this room, but none of them developed yellow fever. The ex-

periment was repeated later on two occasions, some individuals actually sleeping in the soiled nightclothes of yellow fever patients, without these volunteers contracting the disease. The fomites had been cleared of suspicion of the crime. Seven individuals in three groups submitted themselves to this experiment, which was loathsome both to sight and smell, to say nothing of their belief that they might contract the disease.

Thus we have the background and preliminary experiments of Reed and his coworkers. Animals not being susceptible, human beings must be used. The three volunteers, Carroll, Dean, and Lazear submitted to the experiment, and all came down with yellow fever, as has been said.

Further human experiment was indicated, but to do this, even though men volunteered, required the approval of higher authority. Fortunately at that time the Governor of Cuba was a great man who held at the same time two commissions. He was a major general of volunteers, and he was a captain of the Medical Corps of the Regular Army, therefore with a knowledge and appreciation of the importance of the experiments proposed. So to Leonard Wood went Walter Reed to receive his approval and promise of moral and pecuniary support. The approval of the Surgeon General was also necessary; so Reed again went to the United States.

Curiously enough, and it is of particular interest to us at this time, another commission had been working for over a year in Cuba and had decided that Sanarelli's *Bacillus icteroides* was the cause of the disease. The French Academy of Medicine had already accepted Sanarelli's organism, and the other commission sought to make its report to the American Public Health Association at its meeting right here in Indianapolis. Had the American Public Health Association likewise gone on record as believing the *Bacillus icteroides* to be the cause of yellow fever, Reed would have indeed had a hard time to continue his investigations in Cuba. So he went post-haste to Indianapolis, and in a fiery debate routed the advocates of Sanarelli's bacillus.

In 3 weeks Reed was back in Cuba and, with funds provided by General Wood, constructed Camp Lazear, 6 miles from Havana and at a distance from all known sources of infections. Agramonte bred and infected the mosquitoes for the Commission, and all was ready except the men who should face the dreaded experiment. Two young Americans came forward and volunteered. They knew well the risk that they ran, but they also knew the vast importance to humanity of the question at issue. Their names are: John J. Moran, Field Clerk at Headquarters, and Private John R. Kissinger, Hospital Corps. Moran was first to be bitten, but Kissinger was first to be taken ill. Their act was brave and noble, and they did it without heroics or desire of reward. Later with the American volunteers were certain Spaniards who endured the test for a reward of gold and the promise of immunity from further attacks. The financial reward, however, was not sufficient to discount the courage of each American and Spaniard who received a monetary honorarium.

The brave conduct of the volunteers was recognized at the time by men of science, though the general public knew little about it. Their deed was such as to merit the award of the Medal of Honor, our highest military decoration, given only for bravery in the face of the enemy "above and beyond the call of duty." Certainly their acts measure up to this high standard, for the enemy that they faced was far more deadly than any visible enemy armed with rifle or other man made weapon.

The Secretary of War, Mr. Root, in his report of 1902, urged that this work receive merited recognition. He said:

> The brilliant character of this scientific achievement, its inestimable value to mankind, the saving of thousands of lives, and the deliverance of the Atlantic seacoast from constant apprehension, demand special recognition from the Government of the United States.

But nearly 30 years rolled around before proper recognition was accorded them. By the Act of February 28, 1929, Congress directed that a Roll of Honor appear annually in the Army Register, and on this roll the names of these brave men should appear. A gold medal was also to be presented to each, or to the representatives of those who had died. It may not be amiss to cite you these honored names:

MEMBERS OF THE BOARD

Major Walter Reed, born in Virginia
Major James Carroll, born in England
Dr. Jesse W. Lazear, born in Maryland
Dr. Aristides Agramonte, born in Cuba

INOCULATED WITH YELLOW FEVER

In alphabetical order:

Private John H. Andrus, born in Pennsylvania
Mr. John R. Bullard, born in Massachusetts
Private A. W. Covington, born in North Carolina
Private William H. Dean, born in Ohio
Private Wallace Forbes, born in Illinois
Private Levi E. Folk, born in South Carolina
Private P. Hamann, born in Germany
Private James F. Hanberry, born in South Carolina
Private Warren G. Jernegan, born in Florida
Private John R. Kissinger, born in Ohio
Mr. John J. Moran, born in Ohio
Private William Olson, born in Wisconsin
Private Charles G. Sonntag, born in South Carolina
Private Clyde L. West, born in Georgia

Folk, Jernegan, and Hanberry of this group had previously undergone the experiment of sleeping with fomites in the house I have already described before they submitted to inoculation by the bite of infected mosquitoes.

SLEPT IN INFECTED BEDDING

Dr. R. P. Cooke, A.A. Surgeon, born in Virginia
Private Thomas M. England, born in Ohio
Private James Hildebrand, born in Georgia
Private Edward Weatherwalks, born in New Jersey

Of Reed, General Wood said:

> I know of no other man of this side of the world who has done so much for humanity as Dr. Reed. His discovery results in the saving of more lives annually than were lost in the Cuban War, and saves the commercial interests of the world a greater financial loss each year than the cost of the Cuban War. . . . Future generations will appreciate fully the value of Dr. Reed's services.

And President Eliot, of Harvard, in admitting Reed to an honorary degree, expressed himself in somewhat the same terms.

The task of eradicating yellow fever from Havana fell to Major William Crawford Gorgas, later Surgeon General of the Army. Gorgas was appointed chief sanitary officer of Havana on February 10, 1900. Under General Wood's orders he instituted the measures now practised everywhere in combating mosquito-borne diseases. He screened yellow fever patients, destroyed mosquitoes, etc., and in 3 months Havana was freed from the disease for the first time in 150 years.

The success of Gorgas in Havana led naturally to his being put in charge of similar work in the newly acquired Canal Zone in 1904. Here what had been a notorious plague spot of disease, the "White Man's Grave," as it was called, was converted into one of the healthiest communities in existence. Gorgas continued the methods which had proved so successful in Havana. In the face of much stupid opposition at first, Gorgas never hesitated in attaining his objective, that of making the isthmus free from yellow fever, and with other diseases under control, before the operations on the canal were commenced. While the elimination of

other diseases was no less important than that of yellow fever, this malady comes first in the minds of the general public. Under the French occupation it was a byword that every tie laid on the Panama Railway cost a life. From 1881 to 1889 the French lost more than 22,000 laborers by death, an annual rate of 240 per 1,000. One station on the old Panama Railway was called "Matachin," from the Spanish words *matar* (kill) and *Chino* (Chinaman), because 1,000 imported Chinese coolies at this point died off in 6 months, as did also 1,000 from the West Coast of Africa.

When the United States took charge of Panama the death rate was 40 per 1,000. A yellow fever epidemic raged from July, 1904, to December, 1905. In less than a year Gorgas had eradicated it entirely, and there has not been a single case of the disease there since May, 1906.

In one of his reports Gorgas said:

> When the Canal shall have been finished it can be shown that sanitation cost about $365,000 per year. For a population of 150,000, this means an expenditure of about 1 cent per capita per day, and this sum is well within the means of any tropical country.

Elsewhere he says:

> I do not believe that posterity will consider the commercial and physical success of the Canal the greatest good it has conferred upon mankind. I hope that as time passes our descendants will see that the greatest good the Canal has brought has been the opportunity it gave for demonstration that the white man could live and work in the tropics, and maintan his health at as high a point as he can, doing the same work, in the temperate zone. That this has been demonstrated none can gainsay.

In 1906 during the period of our second intervention in Cuba, Major (now Brigadier General, retired) Jefferson R. Kean, a medical officer who had already been commended for his work in helping the Reed Yellow Fever Board, and curiously enough the first yellow fever patient that his friend Reed had ever seen, was placed on duty by President Taft as Sanitary Adviser to the Provisional Government of Cuba. This position he held throughout the entire period of occupation (1906–1909), and during this time he extinguished yellow fever, which had reinvaded the island during the first Cuban republic, no doubt partly owing to the great increase in the non-immune population, and it had spread all over the island. In 1900, when yellow fever had been extinguished in Havana, it disappeared from the entire island.

During the remainder of his life, even while he was Surgeon General of the Army, Gorgas was frequently called to distant parts of the tropical world to give advice and assistance. After his retirement from active duty, after having served as Surgeon General through the World War, he was on his way to South Africa on work for the International Health Board, when, delayed in Europe by the award of many honors, he died suddenly in London, having been knighted on his deathbed by King George V. As Colonel Ashburn said, "He was a varray parfit gentil knyght."

The preventive measures used by Reed and Gorgas have been, and are being put into effect in many tropical lands. In his recently published report on *Twenty-five Years of American Medical Activity in the Isthmus of Panama*, a work received with enthusiasm in Britain, France, and elsewhere, Colonel Weston P. Chamberlain, Health Officer of the canal, says:

> By far the larger part of the morbidity and mortality formerly attributed to tropical climates was due, not to climate *per se*, but to isolation, nostalgia, venereal disease, alcoholic excess, poor municipal conditions, and, most important of all, to infection with specific parasites whose invasion is now entirely preventable. . . .

Commenting on which, Sir William Horrocks remarks: "This may justly

be regarded as a triumph of preventive medicine."

It is a great pleasure to me to know that 4 of these brave men who submitted their bodies to the bite of infected yellow fever mosquitoes (*Aedes Egypti*), or to inoculation directly with the blood of yellow fever patients in these conclusive experiments of Reed and his coworkers, are living and present at this banquet this evening. It will be an honor to meet them face to face, and be able to greet them. It was my great privilege as a junior officer of the Medical Corps of the Army to be a member of the class which graduated from the Army Medical School in 1902. This was the last class to complete the entire course under the direct teaching of this great benefactor of humanity, Walter Reed. He died, as you know, November 23, 1902, shortly after the opening of the session 1902–1903 of the Army Medical School. He was a born teacher. His command of clear and concise language, and his ability to impart his knowledge to others I have never seen excelled, if equalled. How happy we students were to be able to call him friend. While he was a member of the Medical Corps of the Army, on which he shed such undying luster, by his accomplishments he belongs, as we in the Medical Corps of the Army are always proud to feel and never forget, to the whole American medical profession. The inspiration of his work and those who labored with him will remain with us forever!

In closing, I have some personal recollections connected with the eradication of yellow fever from the island of Cuba during the second occupation. In the years following Reed's and his coworkers' discovery and its practical application by Gorgas, the first Cuban Republic had been established. As you know, yellow fever again was reintroduced into Cuba. You will recall that at the time of the second intervention one of the problems which the provisional government had to face and solve was the presence of yellow fever in the island. It was my good fortune to serve during the second intervention, 1906 to 1909, as a member of the Army of Cuban Pacification. Through the courtesy of General Kean, then a major, and as previously stated the sanitary adviser for the provisional government, I met Dr. Carlos J. Finlay, Dr. Juan Guiteras, and Dr. Aristides Agramonte, who were known as the Yellow Fever Board. One of their duties was to see all cases of yellow fever occurring in Havana and to make a final diagnosis in any case of doubt. Owing to the kindness of the members of the board I had an opportunity to see practically all cases of yellow fever in the Beneficientia and the Las Animas Hospitals in Havana until the disease was controlled. I was intensely interested in having this opportunity to see closely this interesting disease. It is a matter of great satisfaction to me to recall that I had this opportunity and the privilege of knowing these three distinguished men, particularly Dr. Finlay who, though he did not prove his theory, was the one who was always convinced that the mosquito was the vector. A few months ago at a dinner given in a private home in Washington, I had the pleasure of meeting the son of Dr. Finlay, who is also a doctor and a specialist in ophthalmology. At the time he had literally just "escaped" from Cuba as he told me. On account of his interest in the students and his connection with the University of Havana, he had been seized by the Machado government last spring and put in prison for a period of some months without any charges being preferred, or being given a chance to face his accusers. Some time after he was released he had excellent reasons to think that has life was in imminent danger. He was forced to come to the

United States. It was interesting to meet the son of a great man who also has inherited from his father much personal charm and professional ability.

I trust that our good friends in the Island of Cuba will soon be able to adjust their difficulties and restore once more in that beautiful country a stable government which will insure the prosperity and happiness of all their people.

I hope that the American Public Health Association on this occasion will send a special message to the faithful wife of Walter Reed who was his companion during his years of service, and who still survives him.

A Symbol

THE Yule log—symbol of Christmas through the ages. On the great holiday the lord of the manor threw wide the doors, and misery and squalor were forgotten in the cheer of the boar's head and wassail.

Customs change, but the Christmas spirit is ageless. Today millions express it by the purchase of Christmas Seals—the penny stickers that fight tuberculosis—still the greatest public health problem. Your pennies will help pay for free clinics, nursing service, preventoria, tuberculin testing, X-rays, rehabilitation and other important work such as medical and social research. *Buy Christmas Seals.*—The National, State and Local Tuberculosis Associations of the United States.

The Story of the Epidemic of Encephalitis in St. Louis*

JOSEPH F. BREDECK, D.P.H.
Health Commissioner, St. Louis, Mo.

THE story of the epidemic of encephalitis in St. Louis and its vicinity is a very interesting one. Climatic conditions in the area involved were unusual for the three summer months—June, July and August. According to the official Weather Bureau records, the rainfall in St. Louis County for these months was the lowest since 1837, when the first official records began. For the City of St. Louis, the rainfall was the lowest in its history, except for a very small portion of the city which, during a single cloudburst, put the official record somewhat higher. The drainage and sewage problem in St. Louis County was favorable to the breeding of unusually large numbers of mosquitoes in areas commonly infested. In addition, the odors emanating from these open sewage channels were pronounced throughout the unusually dry summer season. In passing, it is of interest to know that there was an epidemic of rabies in St. Louis which began in March of this year.

The first information concerning the epidemic of encephalitis reached the Health Division of St. Louis August 8, 1933, when the superintendent of the Isolation Hospital notified the Health Division that 16 cases of an unusual type of encephaltis were admitted from the St. Louis County Hospital. On August 9 these cases were examined by a member of the Health Division together with staff members of the Isolation Hospital. The histories, physical examination, and other facts obtained were discussed by the members of the Health Division, and immediate steps were taken to advise the medical profession and the laity of the epidemic. It was important that such knowledge reach the public as well as the medical profession, and the newspapers of St. Louis were very coöperative in promulgating all necessary information.

On August 10 still more cases came in from the County, and it was quite obvious then that the City of St. Louis could not escape the epidemic. Plans for field investigation were formulated and started on the same day, on the County cases, since there were then no cases reported in the City of St. Louis proper.

On August 12 a telegram was received from the Surgeon-General of the U. S. Public Health Service offering us all assistance we might need, and we wired back requesting an epidemiologist. Dr. James P. Leake, Senior Surgeon, U. S. Public Health Service arrived on the morning of August 14. Up to this date we still had no cases reported in St. Louis, so that all of our investigations were concentrated out in the County.

On August 12 it was felt that if we were to get anywhere in the study of this epidemic, we must have the co-

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operation of all the health officers in St. Louis and surrounding territory. Letters were sent out to all of these officers inviting them to a meeting in the Health Commissioner's office in St. Louis on August 14. At this meeting a uniform questionnaire was proposed and general plans for handling the epidemic were discussed. On August 17, the Metropolitan Health Council was formed, composed of all health officers in St. Louis County, St. Louis proper and those on the East side, in St. Clair and Madison Counties, in Illinois. The Metropolitan Health Council was to be a coöperative body, to meet at call of the secretary for the handling of emergencies and the exchange of ideas on public health matters. Rules and regulations for handling the cases of epidemic encephalitis were suggested and adopted.

Early field investigations led us to believe that we were dealing with a disease which was similar in its spread to poliomyelitis. The cases were widely scattered, occurring in the suburban areas of the County. It was apparent very early that rarely more than one member of a family was affected, and that the upper age groups were involved more than younger individuals.

It was important also to decide on the hospital program to be inaugurated. The Isolation Hospital it was evident would not be able to handle all the cases, so that the throwing open of all the hospitals in St. Louis for the care of these patients was an urgent matter. As the field investigations were so strongly in favor of the disease not being readily communicable from one member of the family to another, we felt it would be safe to handle these cases in the general hospitals provided sections of the hospitals were set aside for their care and where the routine isolation could be enforced as with any other communicable disease. This was done by sending a notice to all superintendents of hospitals and had their complete and immediate coöperation.

It became manifest early that the diagnosis was delayed for several days in many patients who had nothing more than fever. The early cases also showed the importance of lumbar puncture as a diagnostic procedure. Since it was of the utmost importance to stress lumbar puncture, we deemed that the hospital was the only satisfactory place where this could be done with the minimum amount of risk. While it is true that in some homes lumbar punctures could have been done, in most instances it was not satisfactory. Besides, the clinical symptoms and complications that arose made it almost impossible to care for these patients in the average home without a day and night nurse. Bladder symptoms requiring catheterization, and patients with delirium often requiring restraint would be handicapped by home treatment. Therefore, hospitalization of all cases was urged, and over 95 per cent of the cases throughout the epidemic were handled in hospitals. Hospitalization further gave an opportunity for more accurate clinical studies and laboratory studies than could have been made at home.

Now that the epidemic is practically over the wisdom of such a procedure is more apparent than ever. Today we can gather uniform clinical and laboratory data from the hospitals so that a complete study and analysis of the epidemic can be made with less amount of error and with more satisfactory types of record.

It was important early to draw attention to the fact that all fever cases where there were no obvious signs of any disease should have a lumbar puncture. In this way we emphasized the importance of early diagnosis and the isolation of doubtful fever cases until such a time that an accurate diagnosis could be established.

Through the newspapers and members of the medical profession we were able to create a public sentiment and coöperation that was amazing. The information issued early was complete from the clinical angle so that little difficulty could be experienced in recognizing the importance of fever, headache, and other symptoms so prominent in this disease. The response was almost dramatic. The cases came in from all sources for consultations to the Health Division, and hospitalization was made routine. Hospitalization served a double purpose of establishing the diagnosis more promptly and at the same time isolating the patient. It was urged that this isolation should be maintained for at least 3 weeks from the date of onset of the disease. All the bulletins that were issued called attention to the clinical symptoms and necessity for isolation.

The reports started coming in to the City of St. Louis on August 17. Then a very curious phenomenon occurred when we started to date back the onset of the first case. Medical men commenced to think back and there was a certain amount of friendly rivalry among the profession as to having had the distinction of recognizing the first case. This led to the discovery that cases that had recovered for several weeks were not reported. When we analyzed the cases we found that the first cases in St. Louis proper were on July 30. The first case in the County was July 7.

With the importance of fever of unknown origin, a number of curious circumstances arose in which we discovered that a large number of bloods had been sent to the City Health Laboratory for Widal test for typhoid. The number of such bloods sent in was over 100 per cent higher than the year previous and this occurred during the month of July and continued throughout August. All of these bloods were negative for typhoid. A complete analysis of these cases is not yet available, but there are suspicions that some of these were probably encephalitis cases of mild character.

With a uniform history blank for the County as well as the City a central clearing-house through the Metropolitan Health Council was established. Daily reports of cases were sent in to the secretary who had them tabulated, and mimeographed copies made and sent out to all health officers of the Council. In this way they kept in touch with the progress of the epidemic. All rules and regulations were based on the strong belief, after field investigations, that we were dealing with a virus disease transmitted through the nasal secretions. Such impressions were reached early because of the very close similarity of spread, and of the seasonal occurrence as in poliomyelitis.

In the County in the first place water was excluded because there were two separate water supplies in St. Louis County, both of which areas were equally involved in the epidemic. The milk supply of St. Louis County is largely supplied from the same dairies as those supplying the City of St. Louis. Home investigations showed no common sources of food in any of the families, so that water, milk and food were excluded early.

Before the first week elapsed numerous theories came pouring into the Health Division office and we had a revival of many of the ancient theories concerned with past epidemics. The miasmatic theory was revived in so far as many felt that the odors from sewers and open drainage channels were responsible for the epidemic. Because the term " sleeping sickness " had been applied, it was thought by less well informed people to have been transmitted by flies. By a strange coincidence a missionary and his family had visited St. Louis County who had just

returned from Africa and within 30 days the epidemic of encephalitis started. The purchase of certain foreign species of animals for the Zoo were also thought to have brought the disease to the City. These, of course, were dismissed without any serious consideration and are mentioned because they are but a few of the many fanciful suggestions that a health officer receives.

Then, as the cases came in with no contact history, the carrier mode of spread became quite important. With the large number of mosquitoes in the areas involved naturally this theory became quite prominent in the minds of many "well-informed" people. However, it never appealed very strongly to the Health Division that mosquitoes played an important rôle in the spread of the disease. With the infection so widely spread and the prevalence of mosquitoes so obvious, they had to be investigated thoroughly. As the result, the Public Health Service men together with the man from the Army Medical School carried on this work to attempt to solve the problem. Up to this time there has been no evidence accumulated to show that mosquitoes have any part to play in the transmission of this disease. While these experiments have not yet been completed, we naturally hold an open mind as to the results.

It was important early to centralize all the laboratory work, particularly from the research angle. All of the pathological material had to be gathered together for animal inoculations since the spinal punctures and brain cultures were negative. With negative cultures by competent laboratory investigators in several hospitals, it was felt that we were on the way to establishing it as a virus disease.

Various animals were selected for the inoculations of brain tissue and other body fluids. Before the susceptible animal was found one of the laboratory investigators found inclusion bodies in the kidney which lent further support to the virus theory of disease. Following closely upon this, monkeys that had been inoculated with brain substance from autopsy material, developed fever and clinical symptoms of encephalitis as seen in man. The microscopic pictures were not unlike those found in human cases. This was very encouraging indeed, and up to this time the monkey inoculations have progressed and the virus has been carried on through three or four series of monkeys. It is the hope and ambition of those engaged in this research that the virus will be maintained and adapted to this species of monkey so that further valuable data may be accumulated. The difficulties of adapting the virus are many. It is too early to state at this time whether such adaptability will be complete or not.

Even the laboratory workers had many suggestions offered them as to how they should proceed. But we have been very fortunate in St. Louis in having two great medical schools who have so admirably coöperated is this research work. Washington University was selected to carry on the particular animal inoculations together with the Public Health Service men, because they had suitable animals, laboratories, and a personnel particularly interested in virus diseases. It was the most expedient place to carry on the work without any loss of time, and a place in which the Service men might establish their headquarters for field as well as laboratory investigations.

Centralization of authority in the Metropolitan Health Council for handling the entire epidemic was a very important step. The personnel of both universities, the hospitals, and the health officers have coöperated to the fullest extent. Their example of unity of purpose might well be emulated elsewhere. With conflicting views and sug-

gestions coming in from all directions the Metropolitan Health Council has stood firmly on the principles that no regulations should be made without careful consideration of the facts obtained. Theories have their place when based on facts. The best professional minds were mobilized locally with the coöperation of the State Health Department and the Public Health Service. No words of mine could express the gratitude, particularly toward the Public Health Service, that is felt by the local authorities in St. Louis and surrounding areas. Their steadying influence has served to concentrate effort and regulations.

As time went on, the opening of the schools became a problem in the minds of many and the St. Louis Health Division, and the Metropolitan Health Council took a very definite stand that the schools should be opened without any restrictions. Health officers are very often tempted by public sentiment and even by professional men to close schools when anything unusual happens. There was no real basis whatsoever for the closing of the schools. The Health Division of St. Louis felt very strongly that this was a time for education of the public and took the stand that schools should open. Public opinion should be created and not merely accepted. There were many who doubted the wisdom of this recommendation, but almost simultaneous with the opening of the schools the epidemic reached its peak and has continued to subside ever since. Others felt that because of the dryness of the season and the odors emanating from many sewers that the Fire Department should be called out to flush sewers. Another miasmatic revival. No water was wasted and the epidemic subsided.

Most of the aggravation we had to contend with came from without the City where newspapers not in contact with the local situation tremendously exaggerated the picture. People were afraid to come to St. Louis to transact even urgent business. Parents were afraid to send their children back to schools and colleges. Yet they had been advised by local, state and federal authorities that business matters could be carried on as usual in St. Louis. Up to this date we have had no reports come to us that lead us to believe that the epidemic was spread elsewhere by any persons going through St. Louis.

During the course of the epidemic, the Metropolitan Health Council appreciated the necessity of making official reports of the research investigations and these were to be made in writing by the Research Committee so appointed and given out by the Council alone. Up to this time the Committee has reported only facts as they have come forth with animal inoculations. As the epidemic progressed the Metropolitan Health Council further has appointed a committee for follow-up work every 3 months for the next year and every 6 months for the second year. The purpose of this was to determine the nature and severity of the after-effects that may have resulted from this disease. Another committee has been appointed for publication so that authoritative facts may be forthcoming from this epidemic. In this way we hope to contribute something of value to others who may be confronted with this same problem in the future.

The Metropolitan Health Council has felt deep responsibility locally as well as nationally in the handling of this epidemic. We have been fortunate, indeed, in having the splendid assistance of the U. S. Public Health Service and others outside of St. Louis in attempting to solve some of the difficult problems involved. We have tried to demonstrate modern public health methods in handling this epidemic while conflicting opinions arose. One of the most important precepts govern-

ing the regulations that were issued was to emphasize first principles of handling any communicable disease: "early diagnosis, hospitalization, and isolation of all fever cases until an accurate diagnosis could be established." The practical handling of the problem could not wait for laboratory confirmation. Many questions arose that might involve months or even years to solve. The soundest principles that we felt were justified were in the belief that this was a virus disease and spread by human carriers and mild cases. Because of the rarity with which more than one member of a family was involved, it was not even deemed advisable to quarantine members of the family. The Health Division did not want to impress anyone with the idea that it was doing more than it was possible to do.

The public was thoroughly informed daily as to the actual facts in the epidemic, and the reasons why certain precautions were taken and why many other procedures were not advocated.

That the measures of early diagnosis, hospitalization and isolation were efficient can be measured only by the fact that 95 per cent of the reported cases were hospitalized. How successful in checking the disease this was, is a matter of speculation. There is no actual method that we can apply in determining the efficiency of such measures. They are, however, those that have been recognized in the handling of all communicable diseases. Our greatest consolation was in the fact that we did not issue regulations which were not based on sound public health practice. Until more fundamental knowledge is forthcoming concerning the true etiology, mode of spread, or specific remedies for this disease nothing could be advocated further.

The epidemic has now disappeared to the point where there are only a few sporadic cases. We have witnessed to date an epidemic of 1,065 cases with 197 deaths.

Epidemiology of Encephalitis*

With Special Reference to the 1933 Epidemic

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THE identity or non-identity of the encephalitis prevalent during August and September of this year in St. Louis and elsewhere, with ordinary lethargic or epidemic encephalitis, is an open question.

Assuming for the present that they are two different diseases, it may be useful to compare them epidemiologically with poliomyelitis. In spite of the similarity of the St. Louis disease to poliomyelitis as to seasonal epidemic occurrence and minute histological changes (apart from the preponderant selective localization of poliomyelitic lesions in the anterior gray matter of the spinal medulla), they cannot be considered as due to the same virus. Though showing a limited amount of variation from epidemic to epidemic,

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poliomyelitis as a disease is not subject to such a wide variation as would be necessary to cause an entire epidemic like the recent one. Poliomyelitis has not been so difficult to transfer to animals as has the recent disease. In a limited personal survey—the result of the present investigation will of course not be available for months—two children were found to have had poliomyelitis a few years before the attack of encephalitis, and similar cases have been mentioned this year in Kansas City and Cincinnati. Two attacks of poliomyelitis in the same person are much more uncommon than this.

Except for the higher mortality in Japan, which is always an uncertain difference, the St. Louis outbreak appears to be a counterpart of the Japanese disease which was epidemic recently in 1924 and 1929. The Japanese have differentiated this as Type B encephalitis, and it may be convenient to preserve this distinction, calling the ordinary form, described by Economo, Type A encephalitis, until immunity tests or other study justify a combination or further separation.

The course of the epidemic is shown in Table I, in cases reported by weeks for St. Louis County and St. Louis City, two mutually exclusive administrative units.

The city is 3½ times more populous than the county, having 840,000 people to the county's 230,000. It is evident that the epidemic began in the county, and was more intense there, the rate of cases per 100,000 being 230 for the county and 63 for the city, or 99 cases per 100,000 population for the city and county combined.

TABLE I

REPORTED CASES OF ENCEPHALITIS BY WEEKS IN ST. LOUIS COUNTY AND ST. LOUIS CITY

Week ending	*St. Louis County*	*St. Louis City*
August 12	41	4
August 19	58	15
August 26	82	39
September 2	106	103
September 9	86	106
September 16	76	108
September 23	32	65
September 30	20	49
October 7	14	31
October 14	7	13
	522	533

This sharply defined seasonal distribution is the same as that occurring in Japan, and is similar to that of the large epidemics of poliomyelitis, but is totally different from that of Type A encephalitis, which occurs at all seasons, but always has had its periods of highest incidence in winter and early spring. Compared with the St. Louis rate of 99 per 100,000, the rate in Kagawa province, the most severely affected in Japan, was 270 in 1924 and 51 in 1929. The area of Kagawa province is 1-1/3 that of St. Louis City and County and the population is 2/3 as great. This is the 6th densest of the 47 provinces of Japan.

Multiple cases in the same family, and connected cases, have occurred in the St. Louis area in about the same proportion as with Type A encephalitis, and somewhat less frequently than in a poliomyelitis epidemic of similar intensity and population density. It might be expected that in an epidemic preponderantly of older people there would be fewer multiple cases in the same family than in epidemics chiefly affecting the young.

The relative frequency of mild or abortive cases is uncertain. Histories of possible cases of this sort have been obtained, but their identity with this disease remains inconclusive in many instances. It is believed that more mild cases have been reported and counted in the total in the St. Louis epidemic than is usual in epidemics of encephalitis.

Data regarding the incubation period are important. Considering only cases where absence from or entrance into the epidemic area occurred just prior

to onset, 7 cases indicated that the infection took place at least 4, 7, 8, 9, 11, 13, and 14 days, respectively, before the first symptoms, while 6 cases indicated that the infection took place not more than 9, 12, 14, 14, 14, and 21 days, respectively, before the first symptoms of the disease in the case becoming infected. The extreme possibilities for the incubation period in these cases would therefore be 4 and 21 days, and the necessary variation in this small group is great enough to take in incubation periods of 9 and 14 days.

No racial or sexual predilection has been shown, except a preponderance of males in the younger age groups, which is common to most diseases. There is no greater frequency in males than in females in the early adult years, such as is usual in smallpox.

As to age, the age group under 15 years comprises 23 per cent of the population in the St. Louis area, and had 13 per cent of the cases; the group 15 to 34 years old had 36 per cent of the population and 23 per cent of the cases; the group 35 to 54 had 28 per cent of the population and 29 per cent of the cases; the group 55 and over had 13 per cent of the population and 35 per cent of the cases.

An even greater preponderance in the aged characterized the two Japanese epidemics which covered the same area most intensively in 1924 and 1929, 5 years apart. A somewhat similar area was covered by the Japanese epidemics of 1912 and 1919, with a similar tendency as to age.

About 20 per cent of the cases reported in the St. Louis area have been fatal, slightly less in the county. This is in contrast to 50 per cent to 60 per cent fatality in the Japanese epidemics. It may be noted, however, that in Japan the ratio of the cases reported in the aged, to the population concerned, in percentages of the totals, is about twice that in the St. Louis area. In other words, it seems possible that in Japan only the more serious cases tend to be reported, for both here and there the disease is much more severe and more fatal in the older age groups. A similar tendency with regard to smallpox has at times been noted in Japan, where a fatality rate of 80 per cent has been reported—much higher than is recorded elsewhere for large epidemics.

The age distribution of cases is of course very different from that observed in poliomyelitis, where the preponderance is much more marked in the opposite direction, the incidence being highest at about 5 years in metropolitan centers. The age distribution in Type A encephalitis varies with the reporter. There is no such uniform preponderance as in poliomyelitis, but usually during epidemics cases have been more frequent during the later childhood and early adult years, to about the same or to a greater extent than is true for the older age groups in Type B encephalitis.

Among the St. Louis cases, the milk supply was so various as to exclude that as a major factor in spreading the disease. The water supplies of St. Louis County and St. Louis City are entirely different. The early appearance of the epidemic in the county practically to the exclusion of the city, at once directed attention to the water, but within the county the municipality of Kirkwood has a supply drawn from the Meramec River, while St. Louis County and St. Louis City draw from the Missouri and the Mississippi Rivers above the Meramec. The Kirkwood cases were investigated and found to have used Meramec River water, and the incidence of the disease in Kirkwood was even slightly higher than in the remainder of the county.

No distinction as to economic status or occupation apparently separated the persons attacked by the disease from the remainder of the population.

The location of the cases is interest-

ing. There were 522 cases in the county, and 533 cases in the city, giving a rate per 100,000 of 230 for the county and 63 for the city. If the 28 city wards be divided into 6 groups, the eastern group, wards 2–11, bordering the Mississippi River but not the county, have an incidence rate per 100,000 of 31. The south mid-city wards, 13–16, have a rate of 46; the north mid-city wards, 18–22, 51; the two extreme northern and southern wards, 1 and 12, bordering both river and county, have a rate of 67, and the central mid-city wards, 17, 23, 25, and 26, a rate of 72. The three western wards 24, 27, and 28, bordering the county and not the river, with a population about the same as that of the other groups, have a rate of 142. Of the incorporated places in the county, the rate in University City was 200, in Clayton 177, in Richmond Heights 186, in Maplewood 236, in Webster Groves 158, in Kirkwood 284, in Glendale 480, and in Brentwood 530 per 100,000 population. Compared with these rates, Kagawa, the most thickly settled and the most heavily attacked province in Japan in both 1924 and 1929, had a rate of 270 in the former year and 51 in the latter. There are 1,000 people per square mile in Kagawa Province and 2,000 in St. Louis City and County.

This heavy incidence around, rather than in the middle of, the most densely populated area, is characteristic of the disease this summer in Kansas City, and in other cities. It is striking, but is no different in order of magnitude, from that found in poliomyelitis. The rate in the New York City epidemic of 1916 was nearly tripled in the less thickly settled boroughs of Richmond and Queens as compared with the more metropolitan boroughs of Manhattan and the Bronx.

It is probable that even if Type B encephalitis is a different disease from Type A, it is not entirely new to this part of the country. Dr. H. D. McIntyre reported similar cases in Cincinnati in 1932 and the Illinois State Department of Health reported an outbreak of about 27 cases in Paris, a city of 9,000, in the same summer.

Cases in epidemic intensity have occurred this year in the Kansas City area, in St. Joseph, Mo., and in Louisville, Ky., but with less intensity than in the St. Louis area. In general, the prevalence has been below the 40th parallel of latitude. This geographical distribution, together with the seasonal incidence, suggests an insect carrier, and experiments are under way to test this hypothesis, but there is a similar tendency in poliomyelitis for certain latitudes to be more severely affected, and the early spread of the cases throughout the wide extended suburban area, instead of by radiation from a focus, is more characteristic of human than of insect transmission.

Types of Epidemic Encephalitis*

A Comparison of the Cases Seen in St. Louis in 1933 With Those Seen in New York City

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PHYSICIANS practising during the past two decades have had the rare opportunity of observing the reappearance and development of epidemic encephalitis. Undoubtedly this disease has occurred in epidemic form under a variety of names during the centuries, and scattered cases have been diagnosed in retrospect in the years immediately preceding the present outbreak.

So far as we can learn the first cases of this epidemic occurred in the spring of 1915 in Bucarest, Rumania, and were described as hemorrhagic encephalitis. Then in the winters of 1915 to 1917, 40 cases diagnosed as subacute encephalomyelitis developed along the Western front in France. An account of these cases was published by Cruchet and his coworkers shortly before von Economo's excellent description of the early cases in Vienna in 1917. To these cases von Economo applied the term "encephalitis lethargica," and to the end he upheld the use of this name. However, he stated that the early cases under his observation had a widely varying symptomatology, although profound somnolence was often an outstanding symptom. At present for many reasons the term "epidemic encephalitis" is preferred. As time went on the disease spread to England, and the observations by certain English writers that lethargy, asthenia, and cranial nerve palsies constituted the typical triad of symptoms has led to many errors of omission in diagnosis.

The first cases to be diagnosed in New York City occurred in the fall of 1918, and these were largely of the meningeal type.

These statements are made not because they are in any way new, but to emphasize the widely varying symptoms that were present even in the small groups of early cases.

Attempts have been made to divide epidemic encephalitis into types, and elaborate classifications have resulted from these efforts. However, many cases could not be included in any type, and other cases in the course of the illness ran through several types. Therefore it seems inadvisable to try to classify the cases with any degree of exactness. Of course, certain broad and general descriptive terms may be retained. For example, it is logical to call cases in which the meningeal symptoms predominate "epidemic encephalitis, meningo-encephalitic type," and cases with evidence of cord involvement "epidemic encephalitis, encephalomyelitic type." Aside from these sub-divisions,

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I should prefer to call all other cases simply "epidemic encephalitis."

That the acute stage of encephalitis is often undiagnosed is apparent to any one who has worked with patients in the chronic stage of the disease. Not infrequently these patients give a history of some mild febrile attack which escaped diagnosis altogether, or was called influenza. Sometimes careful questioning elicits the fact that this febrile attack was accompanied by transient blurring of vision, or diplopia, or by delirium, or by unusual drowsiness, and it becomes evident that a diagnosis of epidemic encephalitis should have been made at the time. In other instances, however, the initial illness was evidently so mild that it seems quite likely that no definite diagnosis could have been made. Occasionally patients are seen who experienced a period of diplopia or other visual disturbance without any other symptom and who remained ambulatory. Later, symptoms of the chronic stage developed.

It is therefore evident that we are dealing with an infecting agent—probably a virus—which may invade the body, producing at first only mild systemic symptoms or affecting only a small local area in the brain without systemic symptoms. Or it may go on—accompanying general symptoms of greater or less severity—to invade any part of the central nervous system. In some of these respects it resembles the action of the virus of poliomyelitis. But the similarity between the two stops sharply at this point. The localizing tendency of the virus of poliomyelitis is much more sharply defined than that of the virus of encephalitis, and the period of its activity is limited—with very rare exceptions—to a few days. Poliomyelitis never presents the highly varied and bizarre clinical picture that often appears in epidemic encephalitis. Moreover the virus of encephalitis in many instances has a tendency to lie dormant for months or many years, later flaring up abruptly into a true exacerbation—which may or may not resemble the original acute attack—or beginning to smolder, slowly but relentlessly, producing the symptoms of what we term the chronic stage of the disease.

It has often been noted that in the various waves of epidemic encephalitis there have been different outstanding groups of symptoms. This does not connote in any way that different causative agents have been at work. Different epidemics of poliomyelitis have shown quite wide variations in symptomatology. The same is true of influenza, in regard to which we can speak less confidently on account of our lack of knowledge of the etiological agent.

Mention must be made of the Australian X-disease in 1917 and 1918. It occurred in hot, dry seasons. There was a case fatality of 70 per cent. Nearly 50 per cent of the cases were less than 5 years of age. The symptoms—convulsions, muscular rigidity, coma, mental confusion, and high fever—in no way suggested poliomyelitis, nor did the fact that 2 of 35 recovered cases had some form of mental disorders resulting from the disease. In a third case typical Parkinsonism had developed 21 months after the initial attack. Indeed the symptoms and the residuals fit in very well with a diagnosis of epidemic encephalitis. On the other hand, the lesions in the brain were considered by Flexner to be more characteristic of poliomyelitis. But are the lesions of the two diseases sufficiently different to base the diagnosis on these grounds alone? I have always thought that this outbreak may very well have been epidemic encephalitis.

Summer encephalitis, so-called, in Japan presents interesting problems. Some Japanese writers incline to the opinion that this is a disease entity dif-

ferent from epidemic encephalitis. Others believe it is a special form of the disease and they call it "epidemic encephalitis—Type B." Epidemics of greater or less extent have apparently occurred in Japan from time to time during the hot seasons since 1871. The most severe outbreak was in 1924, when nearly 7,000 cases were reported, with a case fatality of about 60 per cent. The greatest incidence and the heaviest mortality were in the older age groups, in patients more than 60 years of age. Kaneko and Aoki believe that this condition is not so infrequent in young people as the statistics indicate, but that it runs a milder course and is more frequently undiagnosed.

The clinical picture of summer encephalitis is characterized by a more acute onset, more marked meningeal symptoms, a greater tendency to delirium and hyperkinetic phenomena or to coma and greater muscular rigidity, than is the so-called winter encephalitis or Type A. Paralyses of the eye muscles are rare in Type B and common in Type A, while paralyses of the muscles of the head and extremities are more frequently found in Type B than in Type A. Kaneko and Aoki state, however, that there are numerous transition cases, and that the seasonal distribution does not always hold—a disease picture very similar to Type B may occur in the colder seasons and one resembling Type A in the summer. Moreover, Parkinsonism, which the authors do not believe follows Type B, is frequently observed in the districts infected with Type B. It is stated that Type B may be followed by neurasthenic symptoms, headache, sleeplessness, irritability, and, particularly in children, changes in mentality and personality. All these manifestations are now considered characteristic of the chronic stage of epidemic encephalitis. Furthermore in 1919, in different regions where Type B appeared in small epidemics in the summer, cases of Type A were observed the following winter.

The pathological lesions of the two types appear to differ only as to location and degree and not absolutely in these respects. Indeed Flexner expressed the opinion that the pathological changes closely resembled those found in the European and American cases of epidemic encephalitis.

As more careful and comprehensive studies have been made of the central nervous system in cases of epidemic encephalitis, it has been found that the lesions in most cases are scattered throughout the entire brain and in some instances involve the spinal cord. Consequently there is a swing away from the original conception that localization of lesions in the basal ganglia was a characteristic of the pathology of the disease.

When one considers all these points, it seems reasonable to believe that summer encephalitis in Japan is, in fact, epidemic encephalitis of the meningo-encephalitic type.

My personal experience with epidemic encephalitis dates from the fall of 1918. During that time 11 cases were seen by our division. None of these presented the triad of symptoms described by the English physicians. Nine showed indications of meningeal involvement, and 10 changes in the sensorium. There was no disturbance of vision. In 3 cases there were changes in the reaction of the pupils. In 1 instance there was limitation of the motion of the eyes. Cranial nerve palsies, not involving the eye muscles, were noted in 3 instances and other paralysis once. Changes in the reflexes occurred in 8 cases but no pathological reflexes were noted.

As time went on the preponderance of different symptoms varied. In general, meningeal symptoms have been present in roughly 50 per cent of our cases each year since 1918. Changes in

the sensorium, drowsiness, stupor, irritability, delirium, maniacal states, in all possible combinations and progressing from one to another in the same patient, have constantly been found in a large percentage of patients up to 75 or 80 per cent. Disturbances of vision began to appear in 1919 and were present in about 18 per cent of the cases. They have never occurred in more than about a third of the patients in any year. These disturbances of vision include blindness, usually temporary, blurring, diplopia, and rarely a curious condition in which objects seem very small, as if the patient was looking through a concave lens.

Changes in the pupillary reactions, limitations of the motion of the eyes, and other cranial nerve paralyses have been present in from a half to three-quarters of our patients. Changes in the superficial and deep reflexes have occurred in about these same proportions. One of the most constant changes has been diminution or loss of the abdominal reflex. The changes in the deep reflexes have included increase, decrease, and inequality. Pathological reflexes have been noted in a fifth or less of the cases. An interesting fact about both changes in reflexes and pathological reflexes has been their variability from day to day or even from hour to hour. Indeed this rapid change is characteristic of most of the signs and symptoms in epidemic encephalitis.

Paralysis or paresis of muscles, other than those supplied by the cranial nerves, were most frequently noted in 1921, in 1923, and thereafter in about 10 to 25 per cent of cases. These paralyses were more often of the spastic than the flaccid type. In some instances they resembled a hemiplegia following a cerebral accident. Sensory changes have been noted in a small number of cases, usually not more than 10 per cent each year.

We saw no cases with convulsions in 1918. Since that time they have occurred in varying numbers of cases up to perhaps 20 per cent in some years.

Tremors or twitchings of groups of muscles began to be a not infrequent symptom in 1919, being present in a fifth or less of the patients.

Changes in muscle tone, spasticity or the lead pipe rigidity were noted in a small number of cases each years since 1918. Catatonia was occasionally observed.

Speech difficulties of various types were occasionally noted. A small number of patients complained of tinnitus, and in two or three instances there was some degree of deafness. Other patients apparently had an increased acuity of hearing and were greatly distressed by ordinary sounds.

It is, of course, impossible to refer to the many unusual symptom that occurred.

The onset was slow in somewhat more than half the cases. Headache was an almost constant feature, as was also some type of fever. Gastrointestinal disturbances were common, of which obstinate constipation was most frequent.

Looking back over the past 15 years, I should say that we have seen in New York a fair representation of epidemic encephalitis in its multitudinous form. I am convinced that only a small percentage of cases are diagnosed in the acute stage. Some no doubt are too mild to admit of a definite diagnosis. But many physicians seem to be so impressed with the importance in diagnosis of that dramatic triad—lethargy, asthenia and cranial nerve palsies—that they are unwilling to diagnose cases in which this does not occur. While these symptoms are almost conclusive evidence of epidemic encephalitis, it is my opinion that they are found in a relatively small percentage of cases.

We have never had a real epidemic

of encephalitis in New York City, and —except for those few early cases in 1918 of the meningo-encephalitic type— we have dealt with all kinds of types. But always there has been a fair representation of the meningo-encephalitic type.

In consequence I was not surprised to see the patients in St. Louis conforming so strictly to that type. The acute onset, the headache, the fever, the stiffness of the neck and spine, the Kernig, the absence of abdominal reflexes, the occasional changes in the deep reflexes, the low incidence of ocular disturbances or cranial nerve palsies, the drowsiness or stupor, the less frequent restlessness or delirium, the obstinate constipation, the short course in patients without other complications, were all characteristic of this type of the disease. Indeed this form is usually considered the most benign, both in its acute stage and in regard to the probability of later developments.

The points about the epidemic that did seem to me unusual were, that it occurred in hot weather, that the age incidence was so high, and that there were so many colored patients. Among more than 1,200 patients observed by either our division of acute infections of the central nervous system or by the Matheson Commission, there have been no more than 5 or 6 negroes. It may well be that they were better diagnosed during the epidemic in St. Louis.

It may be of interest to note—though it has no particular bearing on the title of this paper—that I have found in our records 12 instances in which patients had both poliomyelitis and encephalitis. In 9, poliomyelitis developed first and in 3 encephalitis was followed by poliomyelitis.

It is evident that during the past 18 years there has been a world-wide incidence of unusual involvements of the central nervous system. We are forced to one of two hypotheses—(1) that during this time there has been an infecting agent attacking any part of the central nervous system and giving rise to highly varied clinical pictures. (2) That there have been several infecting agents, equally widespread and giving rise to much the same pathological reactions in the central nervous system. Of these the first hypothesis seems the more logical.

DISCUSSION

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WHEN the laboratory investigation of the epidemic of encephalitis in St. Louis was centralized in a committee by the Metropolitan Health Council, the work was organized into three branches. One division undertook the study of the pathology of the disease; a second division studied clinical laboratory data; and a third division investigated etiology. These were not sharp divisions of personnel, but were the three lines along which studies were to be pursued.

In carrying out this plan, a letter was sent to the hospitals in the metropolitan area suggesting a minimum routine for the laboratory study of cases, and requesting that members of the committee be notified of autopsies so that material for study could be collected. The num-

ber of cases made available in this way made it possible to exercise more care in the selection of material for experimental work.

It seemed obvious that a study of the etiology of this disease should not be undertaken in too great a spirit of optimism, but that the work should be planned in such a manner that negative results would be significant. Accordingly blood, spinal fluid, and autopsy material were carefully cultured, with negative results except for rare instances in which the small numbers and variety of the bacteria recovered justified considering them either secondary invaders or contaminants.

The failure to demonstrate any cultivable organism that appeared to be of etiological significance led to the belief that the causative agent was probably a filterable virus. Since herpes virus has been drawn into discussion most frequently in connection with studies on the etiology of encephalitis, an effort was made to isolate it by the inoculation of a number of rabbits and some cebus monkeys. The uniformly negative results of these inoculations would seem to justify the conclusion that herpes virus does not play an etiological rôle in the St. Louis epidemic.

Animals of a wide variety have been inoculated in an attempt to isolate a virus of etiological significance. Any detailed report of the experimental results at this time would be premature, except to say that some of the findings are encouraging. A number of rhesus monkeys have shown elevated temperatures accompanied by weakness, incoördination and tremors. Pathological examination of these animals showed changes consistent with human encephalitis. This work has not progressed far enough to permit definite interpretation.

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St. Louis, Mo.

IT has been my privilege to see a large number of the cases of encephalitis in St. Louis from the very outset of the epidemic down to the present time. The larger part of these was seen at the St. Louis Isolation Hospital, where, to date, we have had 318 cases. Of these, 68 have died, making a mortality rate of about 21 per cent, and 197 have been discharged, with 53 still remaining in the hospital.

When the first cases were brought to the hospital, before we were aware of the presence of an epidemic, we commented on the striking similarity, in certain respects, between these patients and those we saw 3 and 4 years before during an extensive measles epidemic when there was a surprisingly large number of cases of post-infectious encephalitis following measles and other infectious diseases. In both there were the abrupt onset, headache, vomiting, drowsiness, and mental confusion with frequent aphasia and tremors, all of which were followed in most instances by rapid improvement, usually within a period of 10 days to 2 weeks. It soon became apparent, however, that this type of encephalitis was entirely different from the others, and moreover, was present in epidemic form. The commonest symptoms of the disease, as we have observed it, have been a rather abrupt onset, with high fever (104°–105°), headache, and stiff neck, although rigidity of the neck has occasionally been absent even in cases of considerable severity. At this time, too, some degree of nausea is apt to be present, and within a few hours many patients develop mental confusion and disorientation, aphasia, and tremors of the hands, tongue and lips. Drowsiness

was common, but coma was rarely so deep that the patient could not be aroused sufficiently to comply with simple requests. In some instances, however, instead of drowsiness, there was hyperirritability and hyperexcitation. Delirium occurred, but was rarely violent or noisy except in the case of alcoholics.

One of the most interesting points of the epidemic, however, was the very small number of patients who showed ocular manifestations. When these occurred, perhaps the commonest was slight blurring of vision for a day or two at the onset of the disease, and even less frequently transient double vision from involvement of the ocular muscles. I can recall no instance of well defined ptosis in the entire series of cases observed. Mild degrees of exophthalmos were noticed in a number of instances, but it was difficult to determine whether these had been present but unnoticed before the illness, or were the direct result of the encephalitis. In one case, however, a woman had been operated upon some months previously because of an exophthalmic goiter, but some degree of exophthalmos and persisted. Following the sudden onset of encephalitis, there was a rapid increase in the exophthalmos, so that the eyes seemed protruded entirely out of the orbits, making it impossible to close the eyelids. This patient died within a few days of the onset, but no autopsy was obtained.

Among the other less frequently observed symptoms were vertigo early in the disease, disturbances of hearing (noises and partial deafness), ataxia of the upper and lower extremities, and paralysis, the latter usually represented by a facial weakness, or spastic paralysis of one or more extremities.

In practically all cases, lumbar puncture revealed a marked increase in the spinal fluid cell count, and often surprisingly high, so that counts of 300–500 were occasionally seen, and in one instance 1,100 cells per cu. mm. Rarely the first tap revealed a normal fluid, but when repeated a day or two later the typical increase in cells was noted. The cells were predominantly lymphocytes, it being very exceptional to find much increase in the polys, although in a few cases the first tap showed 30–50 per cent polys, with subsequent punctures revealing fluid which conformed to the usual type. The spinal fluid sugar was normal or slightly elevated.

In the neurological examination, probably the most constant deviation from the normal was an absence of abdominal reflexes during the acute stage of the disease, although exceptions were found to this rule, especially in children. The Kernig was positive in the majority of cases, although occasionally slight or absent despite pronounced nuchal rigidity and high spinal fluid cell count. Pathological toe signs were found rather frequently, but apparently bore no relation to the severity of the disease. Fundus examinations in the first 60 cases revealed nothing of consequence except frequent engorgement of the retinal vessels. The pupils were usually quite small but not pin-point, and reacted to both light and accommodation. Several of our patients had a marked ataxia of the cerebellar type, but coarse or intention tremor of the hands was less frequent than one made up of finer movements.

In the uncomplicated cases of encephalitis, it has seemed to me that the temperature curve is rather characteristic. At the onset of the encephalitic symptoms the temperature is usually high, approaching 104°–105° F., but following the peak, a step by step fall occurs, so that the normal is reached within about 6–10 days. There were occasional exceptions to this in which the febrile course was more prolonged or, less frequently, fell by crisis. Subsequent elevations usually denoted the

presence of complications. It may be of interest to mention the fact that herpes labialis was encountered in a very small percentage of cases.

Although in many cases, the first symptoms noticed were definitely of the encephalitic or meningeal type, in a number of others these were preceded by what appeared to be a definite period of invasion. In such instances there were commonly a moderate amount of fever and headache, " grippy " pains in back and limbs, chilly sensations, and often a sore throat or, less frequently, other mild upper respiratory symptoms. Photophobia and slight conjunctivitis were not infrequently seen at this stage, but real rhinitis or pronounced cough and bronchitis were very rare. Although some patients had a slight rigidity of the back or neck even at this stage, this was usually so slight as to be overlooked in the usual examination. This " period of invasion," if it may be called such, lasted as a rule from 1 to 4 days, during which time the temperature tended to become lower and the patient's malaise and general discomfort were definitely lessened. Then, with the onset of the encephalitic syndrome, there was again a marked exacerbation of the temperature, headache, stiff neck, and all the other typical symptoms.

In contrast to these two types, mild forms of the disease were encountered which were diagnosed only with the greatest difficulty. Such patients had fever and usually some headache, but lacked the tremor and mental confusion which might have given the clue to the disease. Often a very slight neck rigidity or the mere presence of fever of unknown origin prompted the lumbar puncture which revealed the characteristic increase in lymphocytic cells. It seems probable that many such cases were missed entirely.

Following an illness as severe as this one, the rapidity of recovery was frequently little short of amazing. Even in cases of considerable severity, in many instances the patients had apparently returned to normal within 10 days to 2 weeks. Indeed, in the 197 cases discharged after a 3 weeks' isolation period, all but a very few seemed to have recovered completely, except for a varying amount of general weakness. This relative absence of residual effects is in striking contrast to what is usually seen in epidemic encephalitis, but whether or not sequelae will develop in the future no one would be justified in predicting. In a few instances mental confusion persisted longer than this period, and among the other symptoms which were slow in clearing up may be mentioned nervousness, irritability, and weakness of the facial muscles.

Of the 318 cases of encephalitis treated in the St. Louis Isolation Hospital up to October 9, 1933, 68 died; but only 8.8 per cent of the deaths were from uncomplicated encephalitis. Of these 68 who died, 69 per cent had broncho-pneumonia, 39 per cent nephritis, and 23½ per cent both nephritis and pneumonia. The deaths by decades are of interest and were as follows:

	Age	*Percentage Mortality*
1st decade	(0–10 yrs.)	0.0
2nd "	(10–20 yrs.)	2.5
3rd "	(20–30 yrs.)	5.1
4th "	(30–40 yrs.)	3.4
5th "	(40–50 yrs.)	19.5
6th "	(50–60 yrs.)	24.5
7th "	(60–70 yrs.)	51.0
8th "	(70–80 yrs.)	60.8
9th "	(80–90 yrs.)	66.6

DISCUSSION

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THE pathological lesions found in the fatal St. Louis cases have been similar to those described in previous epidemics of acute encephalitis. The only consistent abnormality apparent to the unaided eye was an intense congestion of the meningeal and intracerebral blood vessels. In addition to this vascular congestion, many of the brains from severe cases showed small hemorrhages in the meninges. Cross-sections through the fresh brain revealed congested intracerebral blood vessels, which gaped open and oozed blood. The cerebral cortex often showed a decidedly pink hue instead of the normal gray color. In some cases, the entire cortex was pink, but in others this change was patchy in distribution. This pink blotching was also seen in practically all severe cases, in the pons and basal ganglia. Small petechial hemorrhages were seen a few times, especially in the pons. The most characteristic gross lesion seemed to be the pink discoloration of the gray substance. It was also occasionally seen in the spinal cord.

Microscopical sections show essentially the same changes that have been described by different observers in previous epidemics, the three features of most importance being the vascular congestion, cellular infiltration and evidences of toxic degeneration in the nerve cells. The blood vessels and capillaries are usually markedly distended. The pink discoloration of the gray substance that was seen with the naked eye was due to capillary congestion. Small petechial hemorrhages in the brain tissue similar to those seen in poliomyelitis are occasionally encountered. Usually, however, the hemorrhage is confined to the perivascular lymphatic space.

The cellular infiltration is of two types. Practically all cases show the typical perivascular collection of lymphocytes and other types of round cells. This lesion is especially conspicuous in the pons and basal ganglia, although in a few cases it is present also in the white substance of the cerebral hemispheres, and in the spinal cord, particularly in the cervical region. In addition to this perivascular cellular infiltration the more severe cases show small focal collections of cells scattered throughout the brain substance. Many of these foci are found in the cerebral cortex and some are situated close to the meningeal surface. They also occur in the midbrain and in the basal ganglia. These cellular foci are not situated about blood vessels, but they seem to have been attracted to areas where necrosis has occurred in the brain tissue. They resemble the glia stars described by the neuropathologists. The remains of a degenerated nerve cell can often be found at the centers of these cellular foci.

Various degenerative changes are found in the nerve cells. Although no particular region of the brain seems to be exempt from this degeneration, the brunt of the attack appears to be borne by the nerve cells in the midbrain and basal nuclei. The nuclei of the cranial nerves are not especially involved. The degenerative changes are those ordinarily observed in nerve cells, namely swelling and eccentricity of the nucleus,

chromatolysis and, in the end, neuronophagia.

Bacteria or other microscopic organisms have not been observed in the brain tissue. In severe cases the lesions in the nervous system are widespread, and are not confined to the midbrain or basal ganglia. A study of many cases gives one the impression that the process in the brain is not one that first starts in the midbrain or basal ganglia and spreads from there to the rest of the brain; but that it is a diffuse process which apparently begins simultaneously in many regions of the brain.

In severe cases, lesions are found in other organs. In the viscera the changes resemble those seen in fatal cases of septicemia and consist of petechial hemorrhages in the serous surfaces and in the mucous membranes. There is often a hemorrhagic and edematous type of pneumonia similar to that seen in individuals dying early in the course of acute epidemic influenza. The kidney in many instances is swollen, the blood vessels are intensely congested, and, on section, the cortex shows cloudy swelling. The kidney pelvis is also congested and may show petechial hemorrhages. Microscopically the epithelium lining the convoluted tubules sometimes shows degenerative changes. Intranuclear inclusion bodies have been found in the cells of the tubular epithelium of the kidney in about one-quarter of the cases so far examined.

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THE epidemic in St. Louis is an excellent example of the harmonious coöperation of local physicians, local health officers, and federal authorities. The investigators have been exceedingly generous with material useful for experimentation obtained during the outbreak of encephalitis.

The facts presented indicate that the epidemic disease occurring in St. Louis is caused by an infectious agent. The question naturally arises as to what kind of an infectious agent is responsible. Infectious agents are usually classified as protozoa, fungi, bacteria, spirochetes, rickettsia, and viruses, and from previous experiences coupled with data presented at this time one is led to suspect that a virus is probably the etiological agent responsible for the epidemic under discussion.

Then comes the question—What kind of virus is inducing the disease? A word should be said regarding the kinds of viruses from which one may choose. First, we have viscerotropic virus diseases as exemplified by measles and yellow fever; second, there are viscerotropic and neurotropic virus maladies as seen in canine distemper and hog cholera; finally, some viruses, *e.g.*, rabies, are entirely neurotropic. It is not absolutely essential that a disease be established in an experimental animal in order to obtain an idea about what part of the body is attacked by an infectious agent, because this fact can be ascertained by a study of the lesions produced by a disease in its natural host, and Dr. McCordock's remarks concerning pathological changes in organs other than the brain are interesting and significant. It is clear that the virus responsible for the St. Louis epidemic invades the brain, but it has not been definitely established that other organs are not also involved. In other words the virus under discussion may be an agent with viscerotropic as well as neurotropic qualities.

From the epidemiological standpoint, it is essential to ascertain, if possible,

whether the St. Louis virus is purely neurotropic, because, if it is only neurotropic, the likelihood of its appearance in the blood stream and of its transmission from person to person by means of blood-sucking insects is remote. Therefore, once the purely neurotropic qualities of a virus have been established, the epidemiologist can more or less disregard insects in his search for the modes of dissemination of the etiological agent in a population.

In spite of the fact that one cannot as yet be certain of the qualities of the virus causing the St. Louis epidemic, it seems that all of the observers are agreed that the clinical and pathological pictures presented by the cases are those of an encephalitis. There seems to be some difference of opinion, however, as to whether this outbreak is similar to that described by Economo and known as epidemic encephalitis. To make a positive statement at this time concerning the relation of the two maladies would be a mistake. Such a remark gains force when it is remembered that the tissues of the body—this is particularly true of the brain and cord—are capable of responding to injury in a limited number of ways. For instance, different viruses may cause similar clinical pictures; the viruses of poliomyelitis and rabies (Trinidad outbreak) at times produce an ascending involvement of the cord and brain known as Landry's paralysis. Although the clinical pictures under these conditions are indistinguishable, they are, nevertheless, produced by different etiological agents. Furthermore, the same virus can and often does produce different clinical pictures in the same species of host. This fact is well exemplified by recent experiences with louping ill (a natural virus disease of sheep) in man, a host responding to the infection with a clinical picture similar to that of influenza, epidemic encephalitis, or tuberculous meningitis. Therefore, in view of the fact that one may obtain a false impression through the classification of diseases, particularly the encephalitides, based solely on clinical and pathological pictures, it seems best to wait for the results of further work on the etiology of the St. Louis encephalitis before a definite decision is reached concerning its relation to other diseases in which an inflammation of the central nervous system is a prominent if not the only demonstrable feature. Finally, I trust that I am not too optimistic when I take the remarks of Dr. Muckenfuss regarding the experimental work in animals to indicate that we may hope for a rapid clarification of the situation based on the identity of the etiological agent.

Production of Antitoxins by Means of Bacteriophage*

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THE theoretical basis for the clinical application of bacteriophage has been a stumbling block in the way of its widespread use and general acceptance. The idea that any biological product could eliminate an infection by dissolution of the organisms concerned without damage to the tissue cells of the host was too fantastically simple to arouse much enthusiasm among many physicians and found little more favor in the more esoteric group of those who devise and carry out experiments. Nevertheless an idea so attractive could not fail to receive attention, and so for 15 years medical literature has contained a very respectable number of articles concerning bacteriophage therapy.

Had clinical trial resulted in failure, bacteriophage no doubt long since would have been found in that limbo where rest so many so-called biologicals that were born to abbreviated lives. As report follows report in the medical journals, however, it becomes apparent that bacteriophage is being more and more extensively applied and month by month is finding greater favor. Meanwhile, the physician, the investigator, and the teacher await a development which will reconcile the reported therapeutic results with the known activities of the bacteriophagic principle.

At the moment there exist several theories concerning the mechanism of bacteriophage therapy. By far the greatest proportion of those who use bacteriophage at all do so in the hope and expectation that the principle coming into contact with the infecting bacterium will destroy the organism and hence free the patient from infection. The bacteriophage used must be able to lyse the organism causing the infection, must come into contact with the organism, and must bring about lysis in the situation where the organism is found. All conditions predisposing against lysis, such as inoculation of repeated doses which produces an antilytic serum, must be avoided. Despite the attacks to which this theory has been subjected, attacks which render the position all but insupportable, it is upon this foundation that bacteriophage therapy today largely rests.

Opposed to this concept are those who claim that lysis is but one of the manifestations of bacteriophage action, that lysis probably seldom occurs under the condition existing in the body, and that bacteriophage therapy if of value at all, owes its success to some other activity of the principle. As one of this group, I have consistently maintained that bacteriophage was of value chiefly through its ability to lyse bacteria *in vitro,* thus putting the bacterial antigen into soluble form and hence forming a vaccine, and that bacteriophage therapy was primarily vaccine therapy. At the same time, as clearly stated in a recent paper,[1] I pointed out that there were other

* Read before the Laboratory Section of the American Public Health Association, at the Sixty-second Annual Meeting in Indianapolis, Ind., October 12, 1933.

activities of bacteriophage that might play a rôle in the recovery of the patient. By taking this stand it was possible to tie up bacteriophage therapy with a widely used if dubiously regarded practice, namely, vaccine therapy. As a justification for this attitude, the *Journal of the American Medical Association*, which has consistently opposed bacteriophage as a therapeutic agent, has recently acknowledged that there may be some justification for its use in the preparation of bacterial antigen.[2]

But while using the vaccine assumption as a means to the end of attempting to explain the apparent success of bacteriophage therapy it has always appeared that there was something resident in the bacteriophage itself of considerable significance. The observed effects in the patient following the use of bacteriophage were too dramatic, and too rapid to be explained solely on the basis of specific bacterial antigen therapy. If lysis by the bacteriophage did not occur in the patient, and it was a simple matter to demonstrate in many instances that it did not occur, some other activity must be accorded to the bacteriophage in order to account for the results. However much this may have been getting the cart before the horse with respect to the development of a new therapeutic procedure, it has had the virtue of leading to results as will appear later.

In most if not all infectious diseases the picture both clinically and pathologically is that of a more or less severe toxemia. The local lesions produced by bacteria are seldom of a serious nature, and as a rule do not occur at all until late in the disease. In typhoid fever, for example, there is little or no damage attributable to the bacillus itself until long after the patient has been seriously and critically ill. In pyelitis, the presence of colon bacilli in the kidney pelvis produces a reaction scarcely detectable upon microscopic examination of the tissue involved, yet the patient may be seriously, even critically ill. This is certainly no new concept of the mechanism of bacterial infection, yet it is surprising how much our efforts in the treatment of bacterial infection have been directed toward getting rid of the bacterium and how little toward combating the toxin. It is perhaps significant that where success has attended the development of specific methods for the treatment of infectious diseases it has been in infections caused by organisms from which soluble toxins could be obtained and antitoxins developed. Failure to succeed in other instances has been caused by our inability to produce toxins which are incidental to the production of antitoxins.

To return again to the subject of bacteriophage, it has been apparent that the clinical use of this principle has suggested its rôle as a producer of antitoxins. Although its use in typhoid fever has been extremely limited, those who have injected typhoid bacteriophage into patients early in the disease have noted particularly the cessation of toxic symptoms. The bacteria did not disappear; in fact, the duration of the disease as measured by the persistence of the organisms in the feces was not shortened, but the patients were not sick in the accepted sense of the word. In the treatment of pyelitis and cystitis with bacteriophage, the most striking observation is the subsidence of symptoms. Bacteria remain in the urine for varying intervals following injection of bacteriophage, but the patient is clinically well. Similar observations in connection with other infections serve but to emphasize the point that the use of bacteriophage either neutralizes the toxins present or stimulates the rapid production of antitoxin.

In view of the long period over which bacteriophage has been studied it might

be expected that the apparent relationship between bacteriophage and toxin would have been investigated. As a matter of fact it was, and the results were so unanimously against antitoxic effect that the problem was regarded as solved. Very early in his work on bacteriophage, d'Herelle [3] reported that when the serum of rabbits inoculated with Shiga bacteriophage was injected into other rabbits, these second animals showed increased susceptibility to Shiga toxin. Hence the conclusion was drawn that bacteriophage did not produce antitoxin. Likewise both Gratia [4] and Hauduroy [5] and later d'Herelle showed that rabbits injected with repeated doses of straphylococcus bacteriophage developed a hypersusceptibility to staphylococcus infection, particularly to toxic effects of such infection. Observations such as this encouraged no expectation that bacteriophage was either antitoxic or capable of producing antitoxin. Furthermore, for those organisms producing exotoxins suitable bacteriophages have not been readily obtained except in the case of Shiga dysentery where there is no simple method of evaluating the potency of the toxin *in vitro*. Hence there has been no method for direct study of the problem.

But clinical experience over a period of several years has led to skepticism regarding the development of hypersusceptibility in individuals receiving repeated inoculations of staphylococcus bacteriophage, and within the past year, with Miss Corpron [6] I reported results exactly opposite to those of Gratia, Hauduroy and d'Herelle concerning the effects of repeated and large doses of staphylococcus bacteriophage in rabbits. Our animals developed a degree of immunity and showed especially, resistance to staphylococcus toxin. Furthermore, the work of Burnett [7] and his coworkers, and of Dollman [8] made available a toxin (staphylococcus) which could be easily measured and which was produced by an organism against which a highly active bacteriophage was available. These facts together with clinical observation over several years led to an investigation of the relationship between bacteriophage and bacterial toxin.

The results of this investigation follow. Details may be found in a preliminary report recently published.[9] Staphylococcus toxins having titers of from 1:100 to 1:500 were prepared. These titers are measured by the dilution in which toxins produce hemolysis of rabbit red blood cells in 1 per cent suspension. It should be noted that the hemolytic titer of staphylococcus toxin is closely correlated to the dermonecrotic and lethal properties of the toxin. Hence while the hemolytic property is easily measured, conclusions based on the results are applicable to the other properties of the toxin.

Staphylococcus bacteriophage is not a toxin since it has no hemolytic power and is innocuous to rabbits. When bacteriophage is combined with staphylococcus toxin, no reduction in the hemolytic or dermo-necrotic power of the toxin is observed. Hence, bacteriophage is not itself an antitoxin. When, however, rabbits are immunized with staphylococcus bacteriophage, their serum is capable of neutralizing staphylococcus toxin with respect to both hemolytic and dermo-necrotic properties of the toxin. This antitoxin is produced rapidly and to a reasonably high titer.

These results were obtained with the stock bacteriophage such as has been used during the past 7 years by the Michigan Department of Health and distributed for use in treatment of staphylococcus infections. It contained staphylococcus antigen, metabolic products of staphylococci and the nutrient medium in which the phage was prepared in addition to the lytic prin-

ciple itself. Obviously no conclusion as to the rôle of bacteriophage in the production of staphylococcus antitoxin could be attempted unless the experiments were performed with bacteriophage free from these associated products. Staphylococcus bacteriophage was accordingly purified by the method of cataphoresis described by Kreuger and Tamada [10] and rabbits were injected with the purified products. Serum from these rabbits neutralized staphylococcus toxin, thus showing that the antigenic stimulus to the production of antitoxin was the bacteriophage itself.

Having then demonstrated that staphylococcus bacteriophage is an antigen capable of producing staphylococcus antitoxin, there remains the question as to how far generalization may be based upon this discovery. It has already been pointed out that bacteriophage for *B. typhosus* and the colon bacillus when used therapeutically had the effect of abating the toxic symptoms in the patient. Streptococcus phage has the same property. It seems logical then since the problem is not yet susceptible to direct experimentation to make the tentative conclusion that all bacteriophages are capable of producing antitoxins. In the event that this conclusion is verified there now exists the means specifically to combat most if not all known bacterial infections, prophylactically by immunizing with bacteriophage, therapeutically by injecting serums prepared by immunizing animals with bacteriophage. At the same time there is now put into our hands the means of standardizing bacteriophage products, determining adequate and reasonable dosage and studying quantitatively the results obtained in a given patient.

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Peru Child Welfare Clauses in the Constitution of 1933

THE constitution promulgated in April, 1933, states that the protection of the physical, mental, and moral health of children is the primary duty of the State. The State must also safeguard the child's right to home life, education, vocational training, and assistance in case of illness or neglect. The State shall intrust these tasks to qualified technical agencies.

Primary instruction is to be compulsory and free. At least one school must be established in each community with 30 children of school age; this includes farming, mining, and industrial communities. In each department at least one school for vocational education is required.

The State shall enact legislation for the care of public and personal health and for the protection of labor.—Official text of the Constitution.

The Need of an Index Statisticus*

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THERE is a story of a ship's cook, who accidentally dropped a silver spoon into the sea. When called to account, his defense was that the spoon wasn't lost—nothing was lost so long as one knew where it was.

Each year, there is produced in the public health and related fields, much valuable statistical information which is doomed to a rôle similar to that of the silver spoon. The difficulty is not so much with the standard table, published year after year, but mainly with the more unusual, or occasional table—a type that is often most informing.

To illustrate: In preparation for a published study, Dr. A. W. Freeman [1] in 1916 searched for tables of the case fatality of typhoid fever by age; he found only one. Fifteen years after publication, a very desirable table of this type was brought to him, which had been published in the 1908 *Annual Report* of the New York City Health Department. He had actually looked through some of the volumes of the New York reports, but the table had been published only once, and had, therefore, been missed by him.

As a second example, a search was once made in our department during practically a solid week for a certain life table which had been published in an out-of-the-way place.

It even happens that information will be laboriously tabulated from one section of a voluminous publication, such as the decennial census report, and later it is found that the same information is present in more desirable form in another section of the same publication. Instances of such difficulties with raw material could be multiplied indefinitely.

There are a number of reasons for this state of affairs. One is, that volumes are not always indexed adequately as to statistical content; another is that there is for the statistical field no consolidated index, such as exists for certain other fields.

Indexes to individual volumes—Turning to annual reports, we sometimes find that there is no index at all, or that the index titles are too vague. Thus, a highly important table, showing the completeness of birth reporting, may be indexed only under "R," for the title "Report of birth index clerk." Accurate and meaningful titles for tables are the first requisite to an index, and proper cross-indexing is a second. Thus a table showing *populations, deaths* and death rate from all causes, by color, sex and *economic status,* should at least be indexed under the words that have been italicized, and, in some instances, under the other headings also. It is especially important to cross-index for the more unusual variates; for this reason, economic status was stressed in the example given.

The form of index followed in *U. S.*

* Read before the Vital Statistics Section of the American Public Health Association at the Sixty-first Annual Meeting in Washington, D. C., October 25, 1932.

Statisticus

EXHIBIT II

Table 1: Population by Color, Nativity, Sex and Age

Area and Age	All Classes			Native White—Native Parentage			Native White—Foreign or Mixed Parentage			Foreign-Born White			Negro			Other Races		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Total	Explanatory text 2, 5, 6, 9						Age distribution of the population of five-city area and of Cleveland, Lakewood, Cleveland Heights, East Cleveland, and Shaker Heights (a special study) 6–9						Geographical distribution, Negro population, in 1920 (map) 12					
Under 1 year	Detail for five-city area and for Cleveland, Lakewood, Cleveland Heights, East Cleveland, and Shaker Heights: 1930 . . . . . 5, 6												Geographical distribution, Negro population, in 1930 (map) 13					
1 to 4 years													Negro population (a special study). 9					
5 to 9 years	Detail for each of the 252 census tracts: 1930 73–123						Color and nativity, percentage of population of the five cities and of Cleveland, Lakewood, Cleveland Heights, East Cleveland, and Shaker Heights 2, 5						Negro population, 25 census tracts with highest percentages: 1930, 1920, 1910 9					
10 to 14 years																		
15 to 17 years	Detail (excluding age) for each census tract: 1920 216–218						Geographical distribution, Negro population, in 1910 (map) 11						Other races, the composition (Mexican, Indian, Chinese, Japanese, and others) 2					
18 to 19 years																		
20 to 24 years																		
25 to 29 years																		
30 to 34 years																		
35 to 44 years																		
45 to 54 years																		
55 to 64 years																		
65 to 74 years																		
75 and over	Detail (excluding age) for each census tract: 1910 231–232																	
Unknown																		

Mortality Reports and in the *Vital Statistics Report* of New York State has much to commend it for annual volumes. We find, for example, such entries as the following:

EXHIBIT I

Rabies, deaths from, 25, 99, 106; by age, 198, 223, 502; by race, 198, 220, 502; by sex, 198, 220, 502; in urban and rural districts, 166.

———, death rate, 99.

If one wishes to find rabies deaths by age, race and sex, he will look for such table on page 198 or 502, since those numbers appear under all three headings. This arrangement saves much time in referring. It would also be possible to index such tables somewhat as follows: Rabies, deaths by age-race-sex * 198, 502.

Howard W. Green has used an interesting form of reference guide which is perhaps more of a table of contents than index. An example is shown in Exhibit II.

Cumulative indexes—The usefulness of the statistical material of periodic reports can further be increased by the preparation of cumulative indexes, which might, in one way or another, be brought to date every 5 or 10 years. As an experiment, the author prepared such an index of *U. S. Mortality Reports* from 1900 to 1929, which revealed interesting information, whose existence had not been suspected. After completion of this index, it was dis-

* The hyphens are suggested to indicate cross-tabulation. "Deaths by age-race-sex" implies complete cross-tabulation, *e.g.*, where it is possible to find deaths of white males of given age. If the table showed whites by age, and males by age, but not the triple grouping described, its title would properly be, "Deaths by age-color, and age-sex." This distinction between partial and complete cross-tabulation may at times be important, since the peculiar usefulness of a given table may hinge solely upon an exceptional degree of cross-tabulation. In indexes to single volumes, confusion upon such points may not give serious inconvenience, but in more comprehensive indexes the distinction becomes more important.

covered that Dr. J. V. DePorte, Chief of the Division of Vital Statistics of the New York State Health Department, had prepared a similar index of the same volumes,* and was preparing a cumulative index of the statistics of his own Division, also. Apparently, therefore, interest in information of this sort is not confined to one person. The writer would appreciate information as to other departments which have made, or are planning to make cumulative indexes of their statistics.

Exhibit III shows a few titles selected to illustrate a form of cumulative index. The meaning and purpose of the symbols in brackets will be discussed below. They are not a necessary part of the title, although useful for certain purposes.

EXHIBIT III

Occupation

Deaths by age-cause-occupation-sex in the Registration Area (28 Causes of death given) 1908 and 1909. Table 11, males; table 12, females. [D:a*d*os.†]

Deaths by age-occupation-sex and by occupation-race-sex in the Registration Area, 1908 and 1909. Table 9, males; table 10, females. [D:aos;ors.]

Parent Nativity

Deaths by age-nativity-parent nativity of foreign born-race-sex, in each state of the Registration Area. (Race includes, White, Negro, Indian, Chinese, Japanese.) Annually, 1900–1910; and 1916–20. [D:anpRs:s.]

Race

Deaths by age-cause-race in each state of the Registration Area. (Race is separated only for states having about 10 per cent, or more colored.) Annually, 1906–1929, except 1921 and 1922. [D:adr′:s.]

Ibid., for each city of 100,000 population. Annually, 1906–1929. [D:adr′:u.]

Deaths by age-cause-race-sex in the Registration Area. Annually, 1923–1929. [D:adrs.]

See also under "parent nativity." [D:anpRS:s.]

* This index has subsequently been published.[3]

† The symbol *d* (suggesting *d*isease) is used for cause of death, as *c* would, too often, suggest "color." For convenience, the symbol for "Registration Area" is omitted, that area being understood unless otherwise specified. Separation by states or cities is, however, indicated after the second colon, as shown in the later examples.

It will be found convenient in preparing a cumulative index, to begin by making out an index card for each table in each volume, showing title (verbal or symbolic), year, table number, and page limits. Additional cards are usually necessary for use in cross-referencing.

For some purposes a tabular index, as illustrated in Exhibit IV, is a helpful preliminary to Form III. The parallel column form (IV) has the advantage that omitted years are readily detected, and that long time series can sometimes be built up from shorter series, that are sufficiently similar.

In Exhibits III and IV, table titles are shown in symbolic as well as verbal form. Among the advantages of symbolic titles are the following:

1. As they are much shorter than the equivalent verbal titles, they save much time, effort and space, in writing and re-writing titles on index cards, etc.
2. They permit indexing of even complex titles with the same definiteness, and in much the same manner as words are indexed in a dictionary. Note the alphabetic arrangement of symbolic titles in Exhibit IV.
3. Being very compact, symbolic titles can sometimes be made to convey a quantity of information which would make verbal titles unbearably long.

A brief outline of a code for writing symbolic titles is given in the Appendix.

More comprehensive indexes—It would appear worthwhile to consider whether a consolidated, international index of statistical material for the demographic field as a whole is not practicable. The desirability of such an index need hardly be argued. The field of general literature has its reader's guides; the medical field has its *Quarterly Cumulative Index Medicus* and other indexes,* but there is no single place to which one can go with

* The Statistical Handbook Series of the League of Nations Health Organisation (Geneva) is of interest in this connection; likewise, the practice in such abstract journals as the *Bulletin of Hygiene* (London), of reprinting tables of importance.

Statisticis

EXHIBIT IV

Column	(1)	(2)	(3)	(4)	(5)	(6)
Symbols	D:*ad*[a]Nb[b]s	D:*ado*s	D:adr′[c]	D:*adr*′	D:ar	D:ar′
Subject	Deaths	Deaths	Deaths	Deaths	Deaths	Deaths
Demog. distri-but'ns	age–cause–nativity–sex	age–cause–occupation–sex	age–cause–race	age–cause–race	age–race	age–race
Place distri-but'ns	–	–	States	Cities 100,000+	States, cities, counties	States, cities 10,000+
Place Totals	Registration Area	Registration Area	Registration Area	–	Standard[e] summary	Standard summary
Years		*Table Number and Page Limits*				
1906			7:362–395[f]	8:396–450	2:258–287	
1907			7:386–423	8:424–478	2:282–311	
1908		11,12:606–629	7:482–523	8:524–603	2:368–401	
1909		11,12:726–779	7:596–639	8:640–721	2:473–509	
1910	13:586–597[d]		8:360–454	9:455–501	3:204–251	
1911			6:354–465	7:466–512		1:150–173
1912			5:146–254	6:255–301		1: 28–49

a. Abridged list, or less detail than standard (underscored or italics).
b. Greater detail than usual or standard (capital letter).
c. Race shown in areas containing 10 per cent colored, or more.
d. The first figure represents table number; the second and third, initial and final page numbers.
e. Standard summary comprises national aggregates for Registration Area, Registration States, Urban and Rural Parts of Registration States, and Cities in Non-Registration States.
f. 1906 does not have aggregate for Registration Area included in table.

reasonable assurance of finding references to statistical tables of desired content. Is it not possible to develop some form of *Index Statisticus*, which will bring to the field of public health statistics the benefits that have accrued to medicine from comprehensive indexing? The type of index considered would resemble the *Surgeon General's Catalogue* somewhat, in that it would summarize a fairly long time period.

An experimental approach toward an *Index Statisticus* is being made with the aid of the statistical library of the School of Hygiene and Public Health, where reports are on file from various parts of the world. As assistance is as yet limited and intermittent, the work must progress slowly, and be selective in several respects. It is hoped, however, that this experiment will help to suggest ways of making statistical resources more accessible.

SUMMARY

At present, much valuable statistical material is practically inaccessible for want of proper indexes.

Compiling offices can help to remedy the situation by better indexing of

annual volumes, and through preparation of cumulative indexes of their series.

The question is raised whether it is not possible to provide an international statistical index for public health and related fields. The experimental beginning of such an index on a restricted scale is reported.

A symbolic code for indicating the content of tables is given in the Appendix which aims to give greater compactness, specificity and indexing facility, than is possible with conventional verbal titles.

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2. Green, H. W. *Population characteristics by census tracts.* Cleveland, Ohio, 1930. Cleveland: Plain Dealer Pub. Co.
3. DePorte, J. V. Guides to Vital Statistics in the United States. Vol. III in the President's Research Committee on Social Trends, 1933. Amer. Statistical Assn., 236 Wooster St., New York City. 38 pp. ($.50.)

APPENDIX—PROVISIONAL CODE FOR SYMBOLIC TITLES

As the symbolism here used is still in developmental form, only a few explanatory comments will be offered at this time.

1. *Symbols*—It is obvious that letters are used in place of the significant words of the title, initial letters when possible. Thus the symbolic title, D:ars:s, is derived from the italicized letters of the following verbal title, *D*eaths: by *a*ge-*r*ace-*s*ex: in *s*tates.

Ordinary time or incidence rates take a super bar over the subject symbol; e.g., $\overline{D}$ = death rates; $\overline{C}$ = case rate. Simple ratios may be expressed as such; e.g., the prevalence of illness, or proportion of the population ill at a specific point of time = C/P; case fatality = D/C.

2. *Sequence*—Colons separate the three parts found in most titles, viz., (a) the subject or thing counted, as births, deaths, etc., (b) the distributions (separations) or specific attributes, as age and cause of death, but excepting (c) place and time specifications, respectively, which are placed last. The indicated sequence clearly follows the usual order in titles. Subdivision by colons makes it possible, when necessary, to use the same letter in different positions to represent different words. Thus, in D:ads, D in the primary position represents deaths; in the secondary position, disease (or cause of death). Similarly in the example of section 1, s in the secondary position stands for sex, whereas in the place position (tertiary) it can only mean states. In practice, these duplications will be found not to give much difficulty.

To facilitate indexing, symbols between colons are arranged alphabetically, e.g., D:aos rather than D:oas.

3. *Detail*—Small letters for distribution symbols indicate the standard or usual degree of detail. Capital letters represent greater detail than standard, hence the large letter suggests a large table.* Italics, or underlined letters, represent sub-standard titles.

The standards proposed are less difficult to remember than might be thought at first, since they are the forms most frequently encountered. For age, the standard distribution calls for single years to four, and a total number of classes of at least fifteen; for cause of death the standard is the current *International List;* for race, white and colored; for nativity, native and foreign born; for urbanization, urban and rural.

As example: In Exhibit IV, title

* A relatively simple, but still useful code can be based upon the Appendix text above the asterisk in section 3, plus section 6 and possibly 5. The resulting symbolic titles will usually be at least as specific as conventional verbal titles. The paragraphs relating to sub-standard distributions (italics) and incomplete cross-tabulation (primed letters) cover refinements, which, although important at times, demand added skill and time in their application. It is believed that super-standard detail, symbolized by capitals, should be indicated even in the simplest index. The capital letters will often call attention to rare information, which might otherwise be missed.

(1), D:*ad*Ns, we find italic *a* and *d*, because age and disease are given in abridged distribution. Capital N is used because the table gives nativity in super-standard detail: viz., by the individual countries of birth.

Single classes are indicated by subscripts; e.g., male sex only = s_m; colored race only = r_c.

4. Adjacent letters, i.e., those not separated by punctuation marks, (e.g., adr), imply cross-tabulation (see first footnote of main text). Incomplete cross-tabulation may be indicated as in the second title of Exhibit III [D:aos:ors], or by "priming" the symbols of attributes not crossed with all others; e.g., D:a'osr' for the title just cited.

5. *Class interval and range*—When it is necessary to specify class interval and range, (most often for place or time) parentheses are used in the tertiary position, the first symbol in parenthesis representing class unit, and the second, range. Example: *D*eaths: by *age-sex*, in each *s*tate of the *U*nited *S*tates: *y*early, *1925–1930* = D:as:(s,U.S.)(y,1925–30). Ordinarily, the symbol may be omitted for the area accepted as standard in a given index (e.g., a national or state registration area).

6. *List of symbols*—The following list of symbols is incomplete but will suffice for many simple indexes. More specific information, e.g., as to standards and subscript symbols, is available on request to the author.

Note: The author is indebted to Dr. Lowell J. Reed for criticisms and suggestions.

Primary (subject) symbols		*Secondary* (distribution) symbols		*Tertiary* symbols	
				A. *Place distributions*	
B	=births	a	=age	n	=nations
B_s	=stillbirths	c^o	=climatic factors	s	=states or provinces
C	=cases	d	=diseases; cause of death	u	=cities of 100,000 population or over
D	=deaths	d''	=joint causes	U_{10M}	=cities of 10,000 population and over
D_i	=infant deaths	h	=residence allocation (*h*ome)	k	=counties
$\overline{D}^P$	=standardized death rate†	i	=income or wealth indexes	t	=permanent census tracts
$\overline{D}^D$	=corrected death rate†	k	=completeness of reporting	w	=wards
E	=life table (expectation)	l	=legitimacy	Z or Σ	=sum
F	=families or households	m	=marital state	$Z_{u,s}$	=sum of cities and sum of states‡
G	=growth data and body measurements	n	=nativity		
I	=migration (in or out)	o	=occupation	B. *Time distributions*	
M	=marriages	p	=parent nativity	h	=hours
P	=population	q	=other hereditary factors	d	=days
Y	=other subjects*	r	=race	w	=weeks
		s	=sex	m	=months
		u	=urbanization	y	=years
		w	=seasonal distribution	5y	=quinquennia
		y	=other distributions*		

* For use with superscript referring to footnote.

† As defined in Pearl's *Medical Biometry and Statistics*. In these, and other hypothetical rates, a superscript is used to indicate the statistical element of the local community which enters the hypothetical rate. For standardized and corrected death rates, these elements are the local age-specific *populations* and *death rates;* hence, the superscripts P and $\overline{D}$, respectively.

‡ Summations lead to rather complex titles; their symbols can often be omitted without serious loss.

"Missed" Epidemics of Septic Sore Throat

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FROM time to time efforts have been made to compile, from official reports and current literature, lists of milk-borne epidemics recorded as having occurred in the United States. The latest comprehensive report which has come to our attention was that prepared by Armstrong and Parran and published in a *Public Health Report* in 1927. This listed 42 milk-borne outbreaks of septic sore throat as having been recorded in a period of 19 years.

Public Health Reports record 30 milk-borne epidemics of septic sore throat as having occurred in the subsequent period 1927–1932 inclusive. The following list, with the states arranged in order of population, represents the total recorded in the two periods.

1. New York	18
2. Pennsylvania	2
3. Illinois	3
4. Ohio	4
5. Texas	1
6. Massachusetts	27
7. Indiana	1
8. Wisconsin	3
9. Minnesota	1
10. Iowa	1
11. Maryland	1
12. Connecticut	4
13. Maine	1
14. Oregon	2
15. New Hampshire	1
16. Vermont	2
Total	72

All of the New York state epidemics have occurred outside of New York City and therefore in an area including less than half of the state's population. This tends to equalize the population factor. Sixty-three per cent of the recorded epidemics are "credited" to 2 states, Massachusetts and New York. Eight states have recorded only 1 epidemic and 32 none.

From the record, showing epidemics to have occurred in all sections of the country—North, East, South, and West—it seems evident that there are no climatic conditions anywhere in the United States which insure freedom from this type of infection. Although state lines obviously offer no bar to the spread of infection, there is a marked and as yet unexplained disparity between the numbers of epidemics recorded in certain adjoining states.

There seem to be at least 4 possible factors which might contribute "jointly or severally" to the disparities: (1) Incorrect diagnoses or epidemics erroneously classified as milk-borne, in states recording the larger numbers. (2) Infection more prevalent in some states than in others. (3) Epidemics prevented in some states by effective "milk control." (4) Epidemics overlooked.

For No. 1, we can speak authoritatively only for New York. We have been careful to include in our lists only authentic milk-borne epidemics of septic

sore throat. It seems reasonable to assume that the same care has been used elsewhere. Certainly no state is anxious to be "credited" with epidemics.

It is conceivable that infection might be more prevalent in some sections than in others or that the udders of certain breeds of cattle or of animals under certain conditions of intensive breeding for high milk production might be more susceptible to infection than others. We know of no evidence supporting these possibilities.

Regarding No. 3, we know of no "control" measure practicable for general application, other than pasteurization, which will prevent these outbreaks. In New York, in the aggregate, something less than 20 per cent of milk sold in the cities, exclusive of New York City, is unpasteurized; in the suburban and rural areas it is, roughly, around 50 per cent. If the states with few or no epidemics recorded had a much greater relative proportion of pasteurized milk, this might be significant. If so, it might be expected that Massachusetts, with 9 more epidemics than New York, would show a materially smaller proportion.

About a year ago, addressing an organization of milk control officers in a state which had recorded 2 epidemics to our 18, in the period of approximately 25 years, we expressed the belief that epidemics were being missed. This conclusion was based in part on the fact that 2 of our most serious epidemics had been under way for about 1 and 2 weeks, respectively, before they were "discovered" by the State Department of Health. How many we may have missed entirely in 25 years, we do not know, but it is perhaps a suspicious circumstance that from January 1, 1917, to the end of 1922, none were recorded, whereas in 1929, 1930, and 1931 we recorded 3 in each year. As a result of recent experiences our tentative belief as to epidemics being overlooked has become almost a settled conviction.

Probably few states are more thoroughly organized for the discovery of outbreaks than New York. All local health officers, approximately 900, are physicians, required to possess certain public health qualifications and removable for cause by the State Commissioner of Health. Fifteen district state health officers, experienced officials, have immediately supervision over their work. Physicians are required by law to make immediate reports to the health officers of cases of communicable disease. The local health officers are in turn required by the state sanitary code to report to the district state health officers cases of certain diseases, including septic sore throat, and also, by telephone or telegraph, outbreaks of any "undiagnosed febrile disease." There are in the state approximately one hundred local laboratories under the general supervision of the State Department of Health, many of them receiving state financial aid on the condition that certain fairly high standards of efficiency have been met. An intensive effort has been made, particularly in the past 4 or 5 years, to bring about the prompt discovery and thorough investigation of all outbreaks of communicable disease, and some of us have been particularly interested in those which might be milk-borne.

On June 13, through a letter from a local resident, the department learned for the first time that there had been an unusual number of cases of sore throat in 2 adjoining rural summer resort villages in northeastern New York. On investigation it developed that between March 13 and June 14 there had been a milk-borne epidemic of approximately 137 cases of septic sore throat, the peak having been on May 20. The health officer's excuse for failing to report cases or any unusual incidence of sore throat was that the

county laboratory had reported negatively on cultures examined for hemolytic streptococci. This laboratory is in charge of an experienced full-time medical bacteriologist and pathologist and has an excellent reputation.

On July 11 the department learned of an outbreak of 17 cases of septic sore throat which had developed a week before in a rural village in the southern part of the state. No report had been received from the health officer. He had recognized and investigated the outbreak, and suspended the sale of milk under suspicion, but the outbreak probably would have gone unrecorded if the department had not heard of it indirectly. It is of interest to note that in 1929 this same village had a milk-borne septic sore throat epidemic of 141 cases.

In July the department learned of an epidemic of at least 200 cases of sore throat, associated with fever and glandular enlargement, which began in May and had nearly subsided when it came to our attention. This was in a village in western New York. No cases had been reported. Up to the time of writing this outbreak does not appear to have been milk-borne; it is mentioned simply because of its belated discovery.

While we find some consolation in the belief that no milk-borne epidemics of septic sore throat occurring in the state in the past few years have been completely missed, it is evident that when any considerable number can be overlooked even for a matter of weeks the machine is not "hitting on all four." To find and correct the cause of the "skips" is one of our present problems. At the same time, notwithstanding its weak spots, we know that we have a fairly effective organization, relatively speaking, for discovery and control of epidemics. If they can be overlooked here, the same thing can happen—and probably is happening—elsewhere. The record is valuable, so far as it goes, but probably incomplete. The question as to how this condition can be corrected is one in which all of us should be interested.

Memorial Banquet in Honor of Dr. Walter Reed and His Associates on the Yellow Fever Commission at Indianapolis, October 11, 1933

EDITORIAL SECTION

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THE SIXTY-SECOND ANNUAL MEETING

AFTER 33 years, our Association has met once more (for the third time) in Indianapolis, and it is not too much to say that it will go down in history as one of the most successful ever held anywhere. The chairman of the local committee, Dr. William F. King, and his aides have made every provision for our comfort and the successful conduct of the meeting. Too much cannot be said in praise of the general arrangements and of the hospitality shown by the people of Indianapolis. An exceptionally good press had been obtained with the result that not only professional people in the city, but the citizenship in general showed great interest in what was going on.

The scientific program was of a high standard of excellence, but the two outstanding features of the meeting were the symposium on epidemic encephalitis given on Tuesday night and the memorial banquet held on Wednesday evening in honor of Dr. Walter Reed and his associates.

The symposium on encephalitis is the first official publication given out on the investigations by the health officials of the City of St. Louis and those of the Public Health Service sent by the government. The hall was packed and the interest shown was intense. We are publishing the papers elsewhere in this issue. We may add that in investigations of this sort, results cannot be obtained for weeks, or perhaps months, but the material given was up-to-date, and constitutes a most valuable contribution to the study of this interesting and more or less mysterious disease.

The Walter Reed Memorial Banquet will go down as a historical event. Its peculiar interest was due to the fact that the first announcement made by Dr. Reed concerning his work was given in 1900 at the meeting of our Association

in Indianapolis. In addition to its significance, the banquet was a brilliant affair. The large dining room was filled to capacity and the close attention shown by everyone, lay and professional, was proof of the interest excited by the event. It was impossible for the older members not to feel some touch of sadness because all members of the Reed Commission are now dead, and of the volunteers who offered themselves for experimental purposes but 4 were present: Dr. Robert P. Cooke, Mr. Levi E. Folk, Mr. John R. Kissenger, whose wife was with him, and Mr. Charles J. Sonntag.

Every attempt was made to obtain the attendance of those who were present at the meeting in 1900, as well as those who were members of the Association at that time. Only 9 were at the meeting. A special table was arranged for them. Mrs. John N. Hurty, the widow of the Health Officer of Indiana, who was our official host in 1900 and who is so well remembered for his excellent work, graced the occasion and was seated with the old members. It may be added that of 19 officers, many of them connected with the Army, serving in Cuba under General Wood in various capacities, mentioned in the report of the Secretary of War, Elihu Root, for 1902, only 3 are known to be living.

The chief address, excellent, and charmingly delivered, was given by Major-General Robert U. Patterson, Surgeon-General of the United States Army. Our knowledge of yellow fever was brought up to date by General F. F. Russell (Retired), whose work on yellow fever under the Rockefeller Foundation is so well known. In connection with the memorial session, the Association is particularly indebted to Brigadier-General Jefferson R. Kean, who was in Cuba while the Reed Commisson was working there and who aided it in many ways. His interest in this memorial meeting was as keen as that of anyone and through him we got into touch with practically all army officers of that date who are still living.

Messages of congratulation were received from many parts of the world. Among these we may mention especially those from Major-General Frank McCoy, aide to General Leonard Wood in Cuba, and General M. W. Ireland, formerly Surgeon-General of the Army. From Canada came the warmest greetings from many important organizations and universities. From England, a fine letter was received from Sir George Newman, Medical Officer of the Ministry of Health. Elihu Root, Secretary of War during the time of the Cuban work, sent a most appreciative letter to us through General Kean. For Mexico greeting was brought by Dr. Manuel Madrazo, executive officer of the Federal Department of Health. Another greeting came by letter from Dr. Monjaras who has been a faithful member of our Association for many years and who is remembered with affection by all fortunate enough to know him. Other letters and telegrams too numerous to mention were received and most of them were read to the audience and broadcast.

A storm of applause greeted the following message from President Franklin D. Roosevelt, sent to us directly by the hand of General Patterson and read by Dr. John A. Ferrell, President of our Association:

> I have just learned that your association will hold a memorial session to Dr. Walter Reed on Wednesday evening, October 11, 1933, at Indianapolis. This nation today shares with the world untold benefits to public health resulting from the monumental work of Major Walter Reed, United States Army. In definitely establishing the fact that the mosquito is the transmitting agency of yellow fever, he earned the gratitude of humanity. I take great pleasure in joining with you in honoring the memory of this great American.

The roll of honor was read by Dr. William F. King and the survivors were

introduced to the audience. Everyone stood and they were greeted with rounds of applause which lasted many minutes.

Not only were we fortunate in holding our meeting in Indianapolis, where so much connected with the history of yellow fever has been announced, but Indianapolis, itself, was fortunate in again being the scene of such an occasion.

The exhibits in Indianapolis were excellent and were not so badly affected by the depression as we had feared. There was a series of scientific exhibits. These were well arranged and reflect great credit on those who provided them. The commercial exhibits were excellent in character and covered almost every activity in which health officers and health workers, generally, are interested.

The meeting in Indianapolis will be remembered by all who were fortunate enough to attend and will take its place alongside of that of 1900 on account of the special features mentioned.

DEPRESSION AND HEALTH IN ENGLAND

WE have stated in previous articles that the health of our nation has not been affected adversely by the depression, floods, and subsequent droughts as much as health officers expected. We have also given one article showing that in Philadelphia, at least, some malnutrition attributable to the adverse conditions were being noticed. We have been taken to task privately for such statements, though they have been backed by reports which were considered authentic. We now have the statistics on this point from England by the Chief Medical Officer of the Ministry of Health for the year 1932, which are not only surprising but also a matter for congratulation. The Chief Medical Officer states unequivocally "The exceptionally good health of the English people continues to be maintained." He points out that this is a "coldly accurate statement" in spite of the fact that in March, 1933, there was published in a report a statement that "The stark reality is that in 1933, for the mass of the population, Britain is a hungry Britain, badly fed, clothed, and housed."

Giving in detail the facts on which this opinion is based, the Chief Medical Officer quotes reports from 23 districts in England, all made by trained officers of health or by school medical officers. A number of these give comparative observations made by the same man over a period of 9 or 10 years, and the general conclusion is reached that any marked degree of malnutrition among children is not evident. There are cases of decided malnutrition in unemployed men and particularly in women. Some of the symptoms which lead to these conclusions are considered, such as anemia, which is comparatively rarely seen as a result of unemployment. A general incapacity for work is seen mostly in married men, past middle life, who are the heads of large families, and in such cases is contributed to by worry and anxiety. There is noted an increase in the incidence of anxiety neurosis. Among men who show incapacity for work are those who in the past have done very heavy manual labor, such as working on docks and in the mines. They have become physically soft chiefly through idleness. One of the most striking symptoms is the slowness of the recovery-reaction. The observers attribute this not so much to the insufficiency of nourishment as to psychological factors, such as lack of incentive.

The report makes no effort to conceal the untoward social results of unemploy-

ment and industrial depression, though it considers them unassessable. It points out that all observations are based on indisputable statistics collected by competent and skilled observers. The death rates have been steadily declining to the end of 1932, which is as far as this report carries us. It is recognized that there may be much impairment of efficiency and even sickness without the end result of death. Nevertheless, the death rate is one criterion which is absolute, as pointed out by Farr. "There is relation," he said, "betwixt death and sickness; and to every death from every cause there is an average number of attacks of sickness, and a specific number of persons incapacitated for work."

Two features are especially noticeable—the infant mortality has declined to 65 per 1,000 births as compared to 67 for the last 5 years, and secondly, the health of school children is remarkably good. In London children in the 8- and 12-year age groups, male and female taken together, were found to be in better condition than in 1931. There was 1 less per 1,000 found in the subnormal group. These results are attributed to various causes, but chiefly to the fact that the health defenses of the country have been effective and afford a great degree of security in times of special difficulty and danger.

It is especially noticeable also that the English people are learning more of the art of living. Five million children per year have had instruction for something like 25 years through the School Medical Service, and results are now showing. Also there are the Maternity and Child Welfare Services and the School Medical Service which are changing the physical outlook of the people. The nation as a whole has become more health conscious and more humanitarian. For something like 40 years the housing problem has been improving. Approximately one-fourth of the whole population has been rehoused in new or reconditioned dwellings since the World War.

Altogether the report under consideration is distinctly encouraging and England is to be congratulated on the good showing. It is a demonstration of the effectiveness of her method of selecting her health officials, and of the permanence of tenure they enjoy.

TUBERCLE BACILLI FROM THE BLOOD STREAM

A FEW years ago Professor Loewenstein and his coworkers astonished the scientific world by claiming to have cultured the tubercle bacillus from the blood of patients suffering from a number of different affections, many of them not at all connected with tuberculosis. For example, in 82 cases of polyarthritis, tubercle bacilli were cultured from the blood in 56. He claimed also to have demonstrated the organisms in the exudates in the joints. Again in tuberculosis of the skin, tubercle bacilli were cultivated in 62 per cent of 66 cases. In another series of 51 cases, the blood of 38 gave positive cultures and it was concluded from these findings that tuberculosis of the skin is a chronic bacillemia and the skin lesions were an exanthematic manifestation due to bacillary emboli. Indeed the claims were that tubercle bacilli had been grown from the blood of a number of affections not heretofore believed to have any connection with tuberculosis.

There was naturally some scepticism felt over these results. In 1932 Professor A. Stanley Griffith [1] requested of Professor Loewenstein a number of his cultures for investigation, and in response received 24 strains, 18 of which

were primary and the remainder subcultures from isolations made in 1930 and 1931. Of these, 11 came from cases of skin tuberculosis, 8 from polyarticular rheumatism, 2 from disseminated sclerosis, and 1 each from dementia praecox, renal tuberculosis and phthisis pulmonalis. These were cultured by Dr. Griffith and also inoculated into animals. Seventeen of them proved to be in every respect cultures of the human type of tubercle bacillus, while 7 were avian strains.

This finding opens up a new field. If further observation confirms these findings we may come to believe that a number of diseases, which heretofore have not been considered as having anything to do with tuberculosis, may be due, in part at least, to the tubercle bacillus. As varied as its manifestations are known to be and as difficult as early diagnosis has been and still is, we may be confronted with a problem concerning which much remains to be solved. There can be no doubt, however, that Professor Loewenstein, with his new culture medium and his methods, has succeeded in demonstrating far reaching activities of the tubercle bacillus which were not even suspected up to the time of his work.

REFERENCE

1. Griffith, A. Stanley, M.D. *Lancet*, Sept. 9, 1933, p. 592.

LETTER FROM GREAT BRITAIN

THE LONDON SCHOOL MEDICAL REPORT

During the last few years most medical officers of health and school medical officers, having regard to the economic conditions, have made a particular point of reporting their findings in the matter of nutrition so far as children are concerned. In general they appear to have been impressed by the absence of signs of falling off, and it is practically impossible to find a report in which the note struck is other than optimistic.

Among the latest to make favorable announcement is Sir Frederick Menzies, Medical Officer of Health and School Medical Officer to the London County Council. Both general and special inquiries made during 1932 showed that "no noticeable change has taken place in the condition of the children, and that in London there has certainly not been any perceptible decline in the children's nutrition."

In regard to most other matters investigated in the case of the school children, satisfactory results are reported: the figures, in fact, are claimed as the best attained since the inauguration of school medical inspection some 25 years ago. Reference is made to a number of special inquiries and activities that have been carried out. The methods adopted in classes for myopic children are described, and general satisfaction with the progress made is expressed.

The scheme for the control of acute rheumatism is shown to be making steady advance, a considerable increase in the number of beds for children suffering from the disease being reported. Increasing attention is being given to immunization against diphtheria, though it is doubtful if this is responsible for the fact that the disease was less prevalent in 1931 and 1932 than in other recent years.

The movement in favor of child guidance clinics is growing, and the few already established are doing most valuable work. Progress in the open-air and special schools continues to be satisfactory and, apropos the retirement of Mr. Macleod Yearsley, the consulting aural surgeon, who urged their

establishment so long ago as 1910, particular reference is made to the great success of the schools and classes conducted for the benefit of the partially deaf.

With the object of "promoting economy in the printing bill," a good deal of material that would undoubtedly have been found both interesting and helpful has been omitted. Space has been used, however, for expressing the hope that it will not be considered necessary to curtail in any essential feature work so fundamental as that of the school medical service "whose aim is to secure such a foundation of health for the industrial population on leaving school as will stand the nation in good stead in the long struggle ahead in the economic sphere."

UNEMPLOYMENT AND THE PUBLIC HEALTH

Sir George Newman in his annual report for 1932 "On the State of the Public Health," devotes a considerable amount of discussion to the relationship between unemployment and national health. His main concern was to discover what was to be learned from vital statistics with regard to the effect of the depression and unemployment. To this end he made an exhaustive examination of all the mortality and morbidity returns that were available and, in addition, of special reports by medical officers of health and under the national health insurance scheme.

The conclusion derived from all his examinations was that the English people, in spite of everything, continued to enjoy strikingly good health; the total death rate for the year (12 per 1,000) was exceptionally low, and the steady decline that has been going on since 1871 has not been interrupted. Of special rates, that of infant mortality is still on the low side and shows no tendency to depart from its downward trend.

Among the individual contributors to mortality in infancy there is no indication of a tendency to prominence in the case of "wasting conditions." In the general list of causes of death, suicide, it is noted, is definitely high; since 1900 the figure has doubled (5,743 in 1932 as against 2,896). That economic conditions may have had something to do with this is recognized, but there is also "the changing psychology toward the act of suicide as a means of release" to be taken into account.

Practically without exception medical officers fail to find noteworthy evidences of privation, and generally Sir George has no difficulty in answering those who are prone to be too pessimistic: the provincial medical practitioner who inclined, like so many physicians, to base conclusions upon inadequate premises, proclaiming that "malnutrition is widespread (in spite of statistics to the contrary) among both children and adults," and those who issued in March, 1933, following a relative study of English public health and housing since 1844, a statement, so very obviously arrestingly phrased, to the effect that "the stark reality is that in 1933, for the mass of the population, Britain is a hungry Britain, badly fed, clothed and housed."

DISEASE INCIDENCE

Perhaps it is because in connection with his unemployment investigation he had to follow such lines, but on this occasion Sir George's report seems to deal more than usual with death and disease, and the provision of hospitals. It is not especially depressing therefor, however, largely because his figures in the main are quite satisfactory.

In the matter of communicable disease, for instance, it is noteworthy that he is in a position to report a reduction in prevalence of nearly all the commoner infections. In the case of those affecting the nervous system the figures

were not too satisfactory, except in regard to encephalitis lethargica which returned the smallest number of cases and of deaths since 1923.

Returns as to tuberculosis afford grounds for satisfaction also, the number of notifications of new cases (69,792) being the lowest on record, and the number of deaths over 2,000 less than in 1931 (33,658 against 35,818). The fact that in the last 10 years the death rate of non-pulmonary tuberculosis has fallen by 37 per cent is again noted.

Of matters other than statistical and epidemiological dealt with, reference may be made to what is said in regard to food and nutrition. In the general press it is this part of the report, indeed, that has attracted most attention, since mention is made at some length of the ill-considered efforts of food producers —bakers, for example—to increase the vitamin D content of various articles by adding ergosterol, and criticisms are levelled against the Englishwoman's capabilities as a cook and a caterer, and English habits in relation to food: meals, says the report, are " monotonous and stale, badly cooked, unappetizing, untidily served," while consumers " bolt their food, or wash it down with tea or beer, forgetting that such a custom is unfair to the food, the tea, the beer, and the body."

THE MISSING SENSE AND THE CLIMATE

To anyone unacquainted with the English it would doubtless create astonishment to learn that these statements, when broadcast in the press, evoked nothing but signs of complete approval. It is notorious, of course, that your Englishman is entirely devoid of all sense of humor. He has earned and perhaps deserves this reputation, I believe, because of the seriousness he displays in the face of comment upon certain of his characteristics, attributes and such-like products as his climate. Merely he does not react as the commentator from without expects because he agrees. He expects to be told, for example, and believes that the continental housewife and continental cookery are so much better than the home variety. He accepts and does not resent a sneer that his food habits and table manners are so much less refined than those of the Frenchman or the Italian.

To anyone with experience, of course, these statements are the supremest nonsense: of home cookery there is only one better than the English and that is the American, and in regard to food daintiness and fastidiousness the situation is exactly the same. The average Englishman has been brought up to regard himself as inferior in these respects, and there is no room for laughter but only for regret that he has been made that way, and he cannot laugh it off—any more than he can bring himself to regard his climate as a laughing matter, having to live with it and suffer its vagaries with such fortitude and philosophy as he can command.

On the subject of climate, and to permit of comment upon my personal sense of humor, I quote a statement from the annual report of the Ministry of Health in regard to the declining infant mortality rate to the effect that ". . . after the steady process of reduction in the rate during the last few decades, the variations now tend to reflect less the direct influence of maternity and child welfare work than the influence of climatic and related factors. This is shown clearly in the figures for the four quarters of the year, which were 87, 58, 49 and 64, respectively, as compared with 94, 59, 46 and 66 in 1931."

CHARLES PORTER, M.D.
London

ASSOCIATION NEWS

The Sixty-third Annual Meeting
of the
American Public Health Association
and
The Fifth Annual Meeting of the Western Branch will be held jointly in 1934 in Pasadena, California

New Officers of A.P.H.A.

President—Haven Emerson, M.D.
President-elect—E. L. Bishop, M.D.
First Vice-President—William F. King, M.D.
Second Vice-President—Prof. J. G. FitzGerald
Third Vice-President—Walter H. Brown, M.D.
Treasurer—Louis I. Dublin, Ph.D.
Executive Secretary—Kendall Emerson, M.D.
Chairman of Executive Board—Thomas Parran, Jr., M.D.

Executive Board

Thomas Parran, Jr., M.D., *Chairman*

John A. Ferrell, M.D.
Walter H. Brown, M.D.
John L. Rice, M.D.
E. L. Bishop, M.D.
Haven Emerson, M.D.
Louis I. Dublin, Ph.D.
John A. Amyot, M.D.
W. S. Rankin, M.D.

New Elective Governing Councilors

Walter H. Brown, M.D.
S. J. Crumbine, M.D.
A. J. Douglas, M.D.
A. W. Freeman, M.D.
W. H. Frost, M.D.
George T. Palmer, Dr.P.H.
Thomas Parran, Jr., M.D.
M. J. Rosenau, M.D.
Henry F. Vaughan, Dr.P.H.
C.-E. A. Winslow, Dr.P.H.

Second Institute on Health Education

THE Second Institute on Health Education, held under the auspices of the Public Health Education Section, at the Indianapolis Annual Meeting, was devoted to The Psychology of Health Education. The institute lasted 3 days, commencing on Saturday, October 7, and running through to Monday, October 9. The registration for the institute numbered 56. Five sessions were held. The sessions were devoted to the consideration of:

1. Why the Psychology of Health Education
2. The Psychological Nature of the Recipient of Health Education
3. Fundamental Principles Relative to (a) arresting attention, (b) enlisting sympathy, (c) importing information, (d) leading to action
4. The Meaning and Mechanism of Motivation

One session was devoted to round table consideration and application of the psychologic principles considered.

The institute which was favorably commented upon by the student body was directed by Dr. Iago Galdston of the New York Academy of Medicine together with Dr. H. E. Kleinschmidt, National Tuberculosis Association, and Mr. Bertrand Brown, Milbank Memorial Fund.

Abstracts on the institute procedure will be made available to the student body within a short period.

IMPORTANT NOTICE FOR MEMBERS WISHING TO APPLY FOR FELLOWSHIP OR LIFE MEMBERSHIP

WITH a view to accommodating eligible members who wish to apply for Fellowship and failed to submit their applications in time to be acted upon at Indianapolis, the Governing Council has given the Committee on Fellowship and Membership permission to accept Fellowship applications after the Annual Meeting, for immediate routing through the various steps incident to Fellowship election. This means that members desirous of applying for Fellowship can do so immediately and have final action taken on their applications within two or three months, instead of having to wait until the time of the 1934 Annual Meeting.

All eligible members who wish to take advantage of this new arrangement are requested to file their completed and sponsored applications with the Committee on Fellowship and Membership not later than November 30, 1933.

Applicants for Life Membership similarly may have prompt action taken on their applications if they are submitted within the current month and accompanied by an initial payment of at least $10.00.

NEW LIFE MEMBERS AND HONORARY FELLOW ELECTED AT INDIANAPOLIS

James W. Bass, M.D., Dallas, Tex., Fellow, Health Officers Section

Joseph Blickensderfer, M.D., New Philadelphia, Pa., Fellow, Health Officers' Section

Kendall Emerson, M.D., New York, N. Y., Fellow, Public Health Education Section

Warren E. Forsythe, M.D., Ann Arbor, Mich., Fellow, Public Health Education Section

W. S. Leathers, M.D., Nashville, Tenn., Fellow, Health Officers Section

Arthur T. McCormack, M.D., Louisville, Ky., Fellow, Health Officers Section

Edward L. Miloslavich, M.D., Milwaukee, Wis., Fellow, Industrial Hygiene Section

Harold H. Mitchell, M.D., New York, N. Y., Fellow, Child Hygiene Section

Peel M. Payne, M.D., Napoleonville, La., Fellow, Health Officers Section

Dr. James R. Scott, Albuquerque, N. M., Fellow, Public Health Education Section

William A. Snow, M.D., New York, N. Y., Fellow, Public Health Education Section

L. H. South, M.D., Louisville, Ky., Fellow, Laboratory Section

HONORARY FELLOW

Dr. William Wilson Jameson, Dean and Professor of Public Health, London School of Hygiene and Tropical Medicine (University of London), was elected to Honorary Fellowship in the Association at its meeting in Indianapolis, in October, 1933.

NEW MEMBERS

The following list includes applicants who have been approved for membership in the A.P.H.A. by the Sub-Committee on Eligibility. These new members have requested affiliation with the sections indicated, and action by the Section Council will follow.

Health Officers Section

Walter L. Bierring, M.D., 406–6th Ave., Des Moines, Ia., Commissioner, State Dept. of Health

Philip E. Blackerby, M.D., 4617 S. 6th St., Louisville, Ky., Assistant State Health Officer

Henry D. Chadwick, M.D., State House, Boston, Mass., State Commissioner of Public Health

Walter W. Council, M.D., Juneau, Alaska, Territorial Health Commissioner

William B. Grayson, M.D., State Capitol, Little Rock, Ark., State Health Officer

Nicholas A. Kremer, M.D., Corner Walnut and 2nd Sts., Madison, Ind., Jefferson County Health Commissioner

George W. Larendon, M.D., City Health Dept., Houston, Tex., Director of Public Health

Manuel F. Madrazo, M.D., Napoles No. 19, Mexico City, Mex., Executive Officer, Federal Department of Health

J. Edwin Obert, M.D., New Egy,t, N. J., Health Officer

Carl A. Scherer, M.D., 115 Court House, Duluth, Minn., County Health Officer

Albert W. Sweet, Court House, Freehold, N. J., State District Health Officer

Frederick J. Swift, M.D., 2414 Kingman Blvd., Des Moines, Ia., Deputy Commissioner, State Department of Health

George C. Truman, M.D., 103 New State Bldg., Phoenix, Ariz., Supt., State Board of Health

Frederic W. Wersebe, M.D., Washington, Conn., Health Officer

Johan C. Wiik, M.D., 408 Bellingham National Bank Bldg., Bellingham, Wash., Whatcom County Health Officer

Laboratory Section

John H. Bailey, M.D., Municipal Contagious Disease Hospital, Chicago, Ill., Resident Physician

Olive R. Benham, 208 Farmington Ave., Hartford, Conn., Chief Serologist, State Dept. of Health

George P. Berry, M.D., School of Medicine, Univ. of Rochester, Rochester, N. Y., Professor of Bacteriology

Jerome S. Chaffee, M.D., Sharon, Conn., Town Health Officer

David B. Charlton, B.A., Station A., Ames, Ia., Sanitary Bacteriologist, Iowa State College

Ko Kuei Chen, Ph.D., M.D., Lilly Research Labs., Indianapolis, Ind. (Assoc.)

Walter S. Davis, B.S., 686 Myrtle Ave., Albany, N. Y., Sanitary Chemist, State Dept. of Health

Florence C. Drach, B.A., Box 1043, Monroe, La., Bacteriologist, State Branch Laboratory

E. G. Gerwe, Ph.D., Wm. S. Merrell Co., Cincinnati, O., Director, Biological Laboratories

Edith Haynes, Ph.D., Indiana Univ. Sch. of Medicine and Hospitals, Indianapolis, Ind, Bacteriologist

Mary K. Higginbotham, 702 College Ave., Bluefield, W. Va., Laboratory Technician

Allan C. Hotchkiss, B.S., 745 North Ave., Bridgeport, Conn., Chemist and Bacteriologist, Mitchell Dairy Co.

Elizabeth McCoy, Ph.D., 412 W. Gilman St., Madison, Wis., Assistant Professor of Agricultural Bacteriology, University of Wisconsin

Frederick M. Remer, 267 Milbank Ave., Greenwich, Conn., Bacteriologist, and State Chemist

Thomas M. Rivers, M.D., New York, N. Y., with Rockefeller Institute for Medical Research

William H. Seemann, M.D., 1577 Henry Clay Ave., New Orleans, La., Bacteriologist, State and City Boards of Health

Alcor A. Shanks, Nassawadox, Va., Bacteriologist

Frederick Smith, B.Ch., M.B., Dept. of Bacteriology, McGill Univ., Montreal, P. Que., Canada, Lecturer in Bacteriology

William L. C. Spaeth, M.D., 5000 Jackson St., Philadelphia, Pa., Director, Clinical Laboratories, Frankford, Northeastern, Kensington and Stetson Hospitals

Vital Statistics Section

George St. J. Perrott, B.A., U. S. Public Health Service, Washington, D. C., Consultant in Vital Statistics

Public Health Engineering Section

G. R. Hilliker, City Hall, Fresno, Calif., City Plumbing Inspector

Industrial Hygiene Section

Frederick M. R. Bulmer, M.B., 100 Eastbourne Ave., Toronto, Ont., Canada, Industrial Hygienist, Ontario Dept. of Health

Karl L. Smith, C.P.H., 290 Congress Ave., New Haven, Conn., Assistant Engineer, John B. Pierce Laboratory of Hygiene

Food and Nutrition Section

Glenville Giddings, M.D., Doctors Bldg., Atlanta, Ga. (Assoc.)

Clarence R. Probst, B.S., Route 1, Torrington, Conn., Charge Milk Department, Torrington Creamery, Inc.

Oscar S. Tischler, Ph.B., Kirby Health Center, Wilkes-Barre, Pa., Milk Control Officer

Evan Wheaton, Research Dept., American Can Co., Maywood, Ill., Bacteriologist

Child Hygiene Section

Albert K. Aldinger, M.D., 157 E. 67 St., New York, N. Y., Director of Health Education, Board of Education

Eleanor Parker, 3319 Dorchester Road, Baltimore, Md., Assistant Supt. of Nurses, Babies' Milk Fund Assn.

James E. Peabody, A.B., 152 Harvard St., Newtonville, Mass., Author of Text-books in Biology and Hygiene

Amelia T. Wood, M.D., Ball State Teachers College, Muncie, Ind., Director of Health Service

Public Health Education Section

Lillian W. Burton, Mt. Airy Ave., Paris, Ky., Visiting Nurse, Metropolitan Life Ins. Co.

Carl F. Deysenroth, 205 W. Wacker Drive, Chicago, Ill., Secretary, Milk Foundation, Inc.

Olive McCormick, 570 Lexington Ave., New York, N. Y., Director, Health and Safety, Girl Scouts, Inc.

Willard W. Patty, Ph.D., Indiana University, Bloomington, Ind., Director of Physical Welfare Training

Mary J. Walters, M.D., Vassar College, Poughkeepsie, N. Y., Assistant Physician, and Instructor in Public Health

Public Health Nursing Section

Agnes B. Belser, R.N., 1521 Hanover Ave., Richmond, Va., Assistant Director, Bureau of Nursing, State Dept. of Health

Eva D. Calhoun, 2803 Gilbert Ave., Cincinnati, O., Local Field Supervisor, Nursing Service, Metropolitan Life Ins. Co.

Edith S. Countryman, R.N., 612 E. 10 St., Des Moines, Ia., State Director, Public Health Nursing, State Dept. of Health

Helen S. Harris, R.N., Box 784, Ocala, Fla., County Health Nurse

Mrs. Charles H. Lyles, R.N., Williamson, W. Va., Mingo County Red Cross Public Health Nurse

Bessie B. Rappaport, c/o L. Elman, 581 Crown St., Brooklyn, N. Y. (Assoc.)

Audrey Sanger, R.N., C.P.H.N., 307 Campus Ave., Pullman, Wash., Public School Nurse

Rosemary Sweinhart, R.N., 326 W. Madison St., Chicago, Ill., Public Health Nurse with Borden Farm Products

Epidemiology Section

Archie L. Gray, M.D., M.P.H., State Board of Health, Jackson, Miss., Director, Epidemiological Unit, State Board of Health

James W. Jackson, M.D., 463 W. 32 St., Indianapolis, Ind., State Epidemiologist

Unaffiliated

Arthur Eisbein, M.D., 168 Humboldt Parkway, Buffalo, N. Y., Diagnostician, City Health Dept.

William J. Fordrung, M.D., Hunter College, Park Ave. & 68 St., New York, N. Y., Professor and Head of Dept. of Physiology and Hygiene

Thomas J. LeBlanc, Sc.D., C.P.H., M.S.P.H., Medical College, Cincinnati, O., Professor of Preventive Medicine

ERRORS AND OMISSIONS

SEVENTH EDITION—STANDARD METHODS FOR THE EXAMINATION OF WATER AND SEWAGE

The following errors and/or omissions have been noted in the first printing of the seventh edition—*Standard Methods for the Examination of Water and Sewage:*

1. Omissions of items in Index.
   Bile salt agar, 174
   Boiler water, 157, 72
   Carbon in sewage, 163
   Cellobiose test, 171
   Citrate test, 171
   Coli-aerogenes English procedure, 172
   Fecal and non-fecal coli-aerogenes organisms, 170
   Ferrocyanide citrate agar, 166
   Lactose broth buffered, 166
   Media, bile salt agar, 174
   Media, sulfite glucose agar, 174
   Sodium citrate test, 171
   Solids, total, 92, 162
   Sulfides in sewage, 164
   Sulfite glucose agar, 174
2. P. 29. Omission. The following sentence should be added to the footnote after the words "distilled water":
   "The 'stock' soap solution is approximately 9 to 10 times as strong as the 'dilute standard' soap solution."
3. P. 50. Error in the footnote, the initials of Mr. Mathews should be E. R. not E. A.
4. P. 49. Error. A serious error results from omission of a decimal point. In Section 3 (Preparation of Iron Standards) line 4 should read "about 40 ml., add 0.5 ml. of 3N hydrochloric acid." The text now reads 5.0. The effect of this is to alter materially the results obtained by the method.
5. P. 158. Omission. During the process of editing the mss. it was agreed that the following footnote should be added to this page:
   "Investigations as yet unpublished indicate deficiencies in this method. Persons desiring to determine fluorine are cautioned to familiarize themselves with the literature on the subject after the date of this publication."
   It was unintentionally omitted. The following will be substituted in the next printing.
   "Persons interested in determination of fluorine should refer to literature on the subject of fluorine determination after 1932 especially to *Industrial & Engineering Chemistry*, Analytical Edition, Vol. 5, 1933, pp. 234 and 236."
6. P. 163. Error in bibliography. "Fairshall" should be Fairhall.
7. P. 166. Error in bibliography. "Dominik" and should be Dominick.

Those possessing copies of the seventh edition are requested to enter the corrections in their copies. Further errors, when and if noted, should be brought to the attention of the undersigned promptly so that corrections can be made before the second printing.

JOHN F. NORTON, PH.D.,
Upjohn Company,
Kalamazoo, Mich.

PUBLIC HEALTH ADMINISTRATION

Extension Course for Health Officers—The New York State Department of Health in coöperation with the Albany Medical College has announced its extension course qualifying physicians for the position of local health officer in communities with less than 50,000 population. The purpose of the instruction is to prepare physicians to assume the office of health officer in such towns, villages and consolidated health districts. The course itself is divided into three parts. Approximately 120 hours of special readings including 20 written tests are first required. This is followed by 8 full days of conference and field work under the leadership of one of the district state health officers. Finally, 1 full week of residence at Albany affords an opportunity to study the clinical aspect of public health work, participate in laboratory work, and observe the administrative phases of the state and local health services.

Tuberculosis Service in Metropolitan New York—The association of tuberculosis clinics in New York City reports that in 1932, 53,509 persons attended the chest clinics of that city. There were included in this group not only diagnosed cases of tuberculosis but also suspicious cases and contacts. These individuals made a total of 134,515 visits. On the first day of the year there were carried forward 9,593 cases and during the year there were 24,991 new admissions and 18,925 readmissions. The number of clinic individuals has increased each year since 1928 when there were 38,852.

Of the 9,593 persons under observation of the district tuberculosis clinics on January 1, 1932, there were 2,528 who had been diagnosed cases of tuberculosis, the remainder being suspicious and contacts. Among the 24,991 new persons admitted to clinics exactly 4,000 new cases of tuberculosis were found.

Educational and supervisory work has been carried on in homes through the nursing service. In 1932 there were made 41,743 nurses' visits in behalf of clinic cases and 83,727 for non-clinic cases, making a total of 125,470 nurses' visits for the sanitary control and home supervision of tuberculosis cases in New York City.—G. J. Drolet, *Consolidated Statement for New York Tuberculosis and Health Association*, June, 1933.

East Orange, N. J.—The Health Officer of this city has continued to make effective use of the *Appraisal Form* in evaluating his health service and in illustrating his annual report. This city in 1932 scored 912 points in a possible 1,000, and in all services with the exception of cancer control and heart disease control the score exceeded 75 per cent. Perfect scores were recorded for vital statistics, infant hygiene, and sanitation.

With a population of 71,827 the death rate was 9.3. There were reported but 4 cases of diphtheria with no deaths and only 4 cases of typhoid fever with but 1 death. The low diphtheria incidence is ascribed to the fact that 46 per cent of the preschool children are now protected against this disease. In the case of the typhoid fever cases no common source of infection was discovered. Two of the cases had recently traveled extensively and the

other 2 were in the habit of taking many of their meals outside of the city.

Because of the prevalence of rabies there was adopted an ordinance that requires all dogs not confined at home to be either muzzled or kept on leash. The enforcement of this ordinance resulted in a decrease in the number of dog bites toward the latter part of the year. No case of human rabies developed although 18 persons bitten by infected dogs were given antirabic treatment.

East Orange was awarded first prize for 1932 for cities of from 50,000 to 100,000 population in the annual Health Contest of the United States Chamber of Commerce. This city also ranked first in her population group in 1929 and received third and second places, respectively, in 1930 and 1931.

Typhoid Carriers in New York State—The death rate from this disease has decreased from 19.7 in 1908 to 1.0 in 1931. The first typhoid carrier was officially reported in 1911 and since that time 368 chronic carriers have been discovered in upstate New York. Of this number 72 were found through the routine examination of release cultures; 277 were discovered by epidemiological investigation of outbreaks. Only 4 carriers were reported as a result of routine foodhandler examinations. The value of the surgical removal of the gall bladder is discussed with the conclusion that this operation should not be ordinarily advised for the relief of the carrier condition for persons over 50 years of age.—*Health News*, New York State Dept. of Health, 10, 153 (Sept. 25), 1933.

Duties of Health Commissioners—Under the direction of a special committee of the Ohio State University a detailed study has been made of the duties of public health commissioners in Ohio. This work has been undertaken to secure a definite basis for selecting the content of courses for health commissioners. The duties of the health officers have been analyzed with a view of conducting a short course for commissioners who are already in service. Ohio possesses 180 separate health districts, 92 of which are city units and 88 general county health districts. This district organization was provided for by an act of the legislature passed in 1920 when more than 2,000 independent city, village, and township health units were abolished.

It is recommended that the short course should be 12 weeks in length and divided into two 6-week periods. Based upon a study of the official duties of the administrator the following units of instruction have been chosen: (1) laboratory and engineering technic, (2) vital statistics and records, (3) diagnosis of communicable diseases, (4) public health administration, (5) health education, (6) personal relations.—W. W. Charters and Darwin A. Hindman, *Educational Monographs, Ohio State University Studies, No. 17*, 1933.

Hamilton, Ont.—When Dr. James Roberts was appointed Medical Officer of Health of Hamilton in 1905 the city was spending about $.30 per capita for public health work, most of which was expended for garbage collection. In 1932 the per capita expenditure of the Health Department had increased to $.87, and with the addition of the health activities of the Board of Education and the Babies' Dispensary Guild the per capita expenditure was approximately 1.17 exclusive of hospital maintenance.

During this period of time the death rate has decreased so that instead of 2,200 persons dying in 1932 there were but 1,400 deaths, an annual saving of 800 lives. The infant death rate has decreased from 158 to 57.7; the tuberculosis death rate from 121 to 42.3. A most striking example of the control of a preventable disease is the reduction in

the diphtheria and typhoid fever death rates. From a rate of 35 per 100,000 in 1905 diphtheria has been reduced until not a single death has occurred during the past 3 years. The typhoid fever rate has likewise dropped from 35 until the disease is now practically non-existent.

Cambridge, Mass.—For 1932 Cambridge reports a general death rate of 12.09 per 1,000, slightly higher than the 11.93 rate for 1931. However, the correct Cambridge resident death rate which includes residents of this city who died outside of Cambridge was 11.3. The infant mortality rate was 56 per 1,000 live babies. Heart disease was the major cause of death followed by cancer. Pneumonia appeared in fourth place and pulmonary tuberculosis in sixth place.

Sixty-nine cases of diphtheria were reported during the year with 4 deaths. One-third of the reported cases and one-half of the deaths occurred in East Cambridge which has only 15 per cent of the population of the entire city. None of the children affected had been immunized.

LABORATORY

PRESERVATION OF MILK SAMPLES WITH BRILLIANT GREEN FOR STREPTOCOCCUS AND ABORTUS EXAMINATION*

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THE ever increasing demand for examination of milk, for the presence of streptococci of mastitis and the abortion organism, presents an important problem to the laboratories concerned. The problem of obtaining suitable milk samples either through the mail or from inspectors is very important. The examination of improperly preserved samples has caused considerable inconvenience and has resulted, in a great many instances, in a reduced quality of market milk.

This reduction in quality is due largely to the subsequent lack of detection of abnormal milk. The milk produced by mastitis infected cows is frequently and intermittently abnormal in flavor and odor to a sufficient degree to impart such abnormality to all milk with which it later comes in contact. It, therefore, is essential to detect cases of mastitis in the various herds, and thus a cheap and efficient agent for preservation of milk samples for examination becomes essential. Undulant fever infection, in humans, that results from the ingestion of raw abortus infected milk presents another important problem. Such milk that is to be examined must be properly preserved. An agent is herein presented for preservation of milk which is to be examined for either or both streptococci of mastitis and the abortion organisms. This preservative is cheap, efficient, and easily applied.

RESULTS AND DISCUSSION

A number of dyes were compared to determine their preserving action in milk. It was desired not only to have

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an agent for preservation of streptococcus infected milk and another for abortus infected milk, but to find one that could be used in the same manner for both tests. The length of time during which a preservative is effective is also important; for this reason 20 days was the time covered in this experiment, since it was felt that this would be sufficient time for a sample to be shipped through the mail to a laboratory for examination.

If milk is held at room temperature without a preservative, souring takes place within 48 hours. This is caused by those bacteria that are found in the udder and also those that get into the sample during its collection; the dye inhibits these bacteria from growing. Thus upon cultural examination the infective organisms can readily be isolated and are not hindered by other bacteria that would grow upon culturing an unpreserved sample. The accuracy of the laboratory tests for detection of mastitis depends upon the condition of the sample submitted. The results of such tests are altered upon the growth of some types of bacteria. If curd formation has taken place a uniformly mixed sample cannot be obtained; thus the results would be very inaccurate. Torrey [1] has demonstrated that sour milk will give an unreliable result to the agglutination test for abortus infection of the udder. Thus the need for a preservative agent is readily conceded where refrigeration is inconvenient or impossible.

Of the dyes under study, brilliant green was found to be most suitable as a preservative agent of milk for the problem involved. Brilliant green (1 per cent aqueous solution) was added to the milk at the rate of 0.1 c.c. per 10 c.c. of milk; this made a final dilution of 1:10,000 of the dye in the milk. Gentian-violet in the same proportions can be substituted for the brilliant green. This, however, is not so satisfactory if the preserved sample is to be titrated for chlorides, due to a masking of the endpoint of titration.

The ability of the dye to preserve the milk is attributed to the bacteriostatic activity which it exhibits. Thus it can readily be seen that care must be exercised at the time of collection of the milk samples, in order that other types of bacteria may not gain entrance. A sterile container is also essential.

The only precautions necessary in the collection of milk samples are: (1) Wipe the udder of the cow, using a cloth moistened with an antiseptic; (2) discard a few streams of milk from each quarter; and (3) milk directly into the container. The preservative may be added prior to collection of the sample, in which case the milk must be added later. In either case a final dilution of 1:10,000 of dye in the milk is essential.

Such preserved milk can be sent through the mail as the samples may be held at room temperature without any changes taking place to alter the results of the usual laboratory tests for detection of mastitis or abortion infection of the udder. The following are the laboratory tests used in mastitis detection: (1) Cultural; (2) leucocytes per c.c.; (3) per cent of chlorides; and (4) catalase. For detection of abortus infection of the udder the agglutination and cultural examination were used. The preservative does not affect any of the above determinations except the titration for the amount of chlorides. Here it causes a change in the color of the endpoint of titration, but does not affect the technic involved. When the preserved milk is diluted with water and potassium dichromate is added the solution is a yellowish green color; the endpoint of titration with silver nitrate is the first shade of a brown color.

Table I presents the results of using brilliant green to preserve naturally streptococcus infected milk. In the

TABLE I

NATURALLY STREPTOCOCCUS INFECTED MILK PRESERVED WITH BRILLIANT GREEN AND HELD AT ROOM TEMPERATURE

Date 1933	*Per Cent Chlorides*	*Cells per c.c.*	*Catalase c.c. of Gas**	*Streptococci per c.c.*	
Sample A					
5/10	0.30	16,960,000	7.5	4,200,000	(without preservative)
5/10	0.30	16,900,000	7.5	4,200,000	
5/11	0.29	16,700,000	7.45	4,200,000	
5/20	0.29	16,600,000	7.5	4,200,000	
5/30	0.28	16,400,000	7.4	4,200,000	
Sample B					
5/10	0.25	3,700,000	6.8	3,000,000	(without preservative)
5/10	0.25	3,920,000	6.8	3,000,000	
5/11	0.26	3,800,000	6.6	3,000,000	
5/20	0.25	3,500,000	6.8	3,000,000	
5/30	0.24	3,450,000	6.7	3,000,000	
Sample C					
5/10	0.26	5,400,000	7.3	10,000,000	(without preservative)
5/10	0.26	5,500,000	7.2	10,000,000	
5/11	0.26	5,200,000	7.1	10,000,000	
5/20	0.24	5,000,000	7.0	9,840,000	
5/30	0.24	5,000,000	6.9	9,900,000	
Sample D					
5/10	0.31	11,660,000	7.0	6,210,000	(without preservative)
5/10	0.31	11,500,000	7.0	6,100,000	
5/11	0.32	11,700,000	6.8	6,200,000	
5/20	0.30	11,000,000	6.8	6,000,000	
5/30	0.31	11,120,000	6.75	6,120,000	
Sample E					
5/10	0.29	5,000,000	5.0	1,600,000	(without preservative)
5/10	0.29	5,200,000	5.0	1,600,000	
5/11	0.28	4,800,000	5.0	1,480,000	
5/20	0.29	5,300,000	5.0	1,500,000	
5/30	0.28	5,100,000	4.9	1,440,000	
Sample F					
5/10	0.27	53,000	4.9	2,200,000	(without preservative)
5/10	0.27	57,000	5.0	2,310,000	
5/11	0.28	60,000	4.9	2,200,000	
5/20	0.26	50,000	4.7	2,200,000	
5/30	0.26	53,000	4.7	2,400,000	
Sample G					
5/10	0.14	20,000	0.5	—	(without preservative)
5/10	0.14	20,800	0.5	—	
5/11	0.13	20,100	small bubble	—	
5/20	0.13	19,400	—	—	
5/30	0.13	19,000	—	—	

* Catalase tube was used to determine amount of gas.

case of each sample an initial set of determinations was made before preservative was added. Immediately upon the addition of brilliant green another

set of determinations was made. No significant variation was found in the results obtained. A non-infected sample was also included in this study; the results clearly indicate that the preservative did not alter the reactions to the various tests.

The time involved in this study was sufficient for milk samples to reach any laboratory. As the time previous to examination runs over 20 days all the values, in the various tests, begin to drop except in the cultural examination. Here samples have been preserved without change for 3 months.

It is not only desirable to have a specific agent for preservation of milk samples that are to be examined for abortus infection of the udder, but to have an agent that can be used for both or where both examinations can be made on the same sample. Table II presents the data using brilliant green as a preservative for milk samples to be examined for abortus infection of the udder. As before, an initial run was made without dye, followed immediately and at intervals with determinations on the preserved samples. Again it is noted that the results are constant during storage. The preservative did not alter the reaction of the noninfected sample.

The uniformity of the results obtained, during storage at room temperature, are definite evidence of the value of brilliant-green dye as a preservative for milk samples that are to be examined for streptococci of mastitis or the abortus organisms. The small amount of dye necessary makes it a very economical agent. Its ease of application is ideal; thus the dye may be placed in the container at the laboratory to which a certain volume of milk must be added at the time of collection of milk sample, or milk can be collected into a sterile container and the dye then added in sufficient amounts to make a final dilution of 1:10,000 of dye in the milk. This method of preserving milk samples enroute to the laboratory for examination has been employed for the past few years in our routine work.

TABLE II

NATURALLY INFECTED ABORTUS MILK PRESERVED WITH BRILLIANT GREEN (1:10,000 FINAL DILUTION) AND HELD AT ROOM TEMPERATURE

Date	*Culture*	*Agglutination on Serum*	
Sample A			
5/10	+	+++P–	(without preservative)
5/10	+	+++P–	
5/11	+	+++P–	
5/20	+	+++P–	
Sample B			
5/10	+	++++P	(without preservative)
5/10	+	++++P	
5/11	+	++++P	
5/20	+	++++P	
Sample C			
5/10	–	–––––	(without preservative)
5/10	–	–––––	
5/11	–	T––––	
5/20	–	–––––	

CONCLUSIONS

An efficient, convenient, and economical agent is herein suggested for preserving milk samples that are to be examined for either mastitis or abortus infection of the udder. Brilliant green in final dilution of 1:10,000 in the milk is sufficient to preserve milk samples without change, for at least 20 days, in so far as the various tests are concerned. Gentian-violet in the same concentration can be substituted for the brilliant green.

REFERENCE

1. Torrey, J. P. The Diagnosis of Brucella Abortus Infection in the Udder of the Cow. *A.J.P.H.* 19, 12:1360 (Dec.), 1929.

AUTOMATIC PIPETTE WASHER

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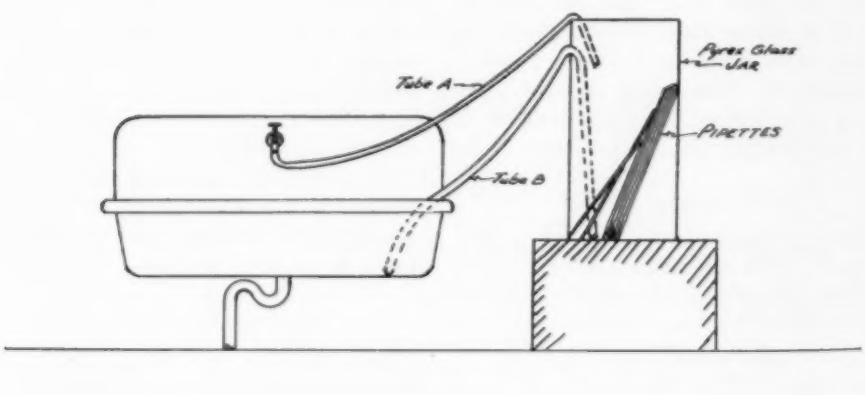
ANY laboratory using as many as 100 pipettes a day would find the described washer of great convenience. The jar is filled and emptied every 7 minutes and in an hour over 100 pipettes are washed more thoroughly and more rapidly than if washed by hand or by a suction tube. The jar is of Pyrex glass, 17½" x 8⅜" in diameter, and easily stands drilling without breakage by any glass company cutting automobile glass. The inlet tube A is 6 mm. inside diameter and the outlet tube B is 14 mm. inside diameter. When the flow of water reaches the hole carrying the outlet tube and bored 2" from the top of the jar, the siphon breaks and the jar automatically empties, and as the level of the water descends in the jar the water in the pipettes drains. After using the washer for a few days the general appearance of the pipettes is greatly improved.



VITAL STATISTICS

Mortality Statistics in the Death Registration Area of Continental United States: 1930, 1931 and 1932—The Bureau of the Census at Washington, D. C., in a release of September 28, 1933, announced that in 1932 in the death registration area of continental United States (exclusive of the State of Utah) there were 1,304,109 deaths from all causes, representing a mortality rate of 10.9 per 1,000 estimated population. This is the lowest rate since the annual collection of mortality statistics was begun in 1900. It is estimated that 96.3 per cent of the total population of the United States was included in the registration area for the year 1932. Because of the failure of the State of Utah to furnish the Bureau with death certificates for the year 1932, no data for that state are included in the summary. However, even if the number of deaths which occurred in Utah were included, the

total death rate for each of the 3 years would remain practically unchanged.

It is gratifying to note that of the 18 groups of causes of death into which the summary is divided, 13 showed decreases in the total number of deaths, while only 3 groups had increases, and 2 remained practically the same. The groups which show decreases include infectious and parasitic diseases, chronic poisonings and intoxications, diseases of the nervous system, of the respiratory system, of the digestive system, and of pregnancy, childbirth and the puerperal state. Of particular interest is the decrease in the death rates (per 100,000 population) in certain causes of death such as typhoid fever (which showed rates of 3.6 in 1932, and 4.4 in 1931), measles (1.6 in 1932, 3.0 in 1931), diphtheria (4.5 in 1932, 4.8 in 1931), tuberculosis, all forms (63.0 in 1932, 68.4 in 1931), diarrhea and enteritis under 2 years of age (12.0 in 1932, 15.7 in 1931) and some others. The large decrease of over 9,000 deaths from tuberculosis (all forms), and the drop in the death rate from 71.7 in 1930 to 63.0 in 1932 is most noteworthy. The smaller number of deaths from diseases of the respiratory system (105,555 in 1932 and 110,617 in 1931) may be accounted for largely by the decrease in both bronchopneumonia, including capillary bronchitis (which showed 39,015 deaths in 1932 and 39,977 in 1931) and lobar pneumonia (49,376 in 1932 and 52,950 in 1931). Influenza showed a decided increase (with 36,818 deaths in 1932 and 31,596 in 1931), though the rate of increase for 1932 over 1931 was much less than from 1930 to 1931. The decrease in diseases of pregnancy, childbirth, and the puerperal state (which accounted for 13,241 deaths in 1932 and 14,188 in 1931), was approximately the same from 1931 to 1932, as from 1930 to 1931, and is due in a large measure to the smaller number of deaths from puerperal albuminuria and eclampsia and puerperal septicemia.

The smaller number of violent and accidental deaths, (117,370 in 1932 and 124,543 in 1931) is due, principally, to the decreased number of deaths from motor vehicle accidents. The number of suicides increased for the 3-year period, from 18,496 in 1930, to 20,880 in 1932, and the number of homicides was more for 1932 (11,016) than for 1930 (10,590), though less than in the year 1931 (11,134).

The outstanding groups in which large increases were shown were cancer and other malignant tumors and diseases of the circulatory system. The number of deaths due to cancer and other malignant tumors (114,873 in 1930, 117,790 in 1931 and 122,339 in 1932) continues to increase from year to year, and practically every title to which deaths due to this cause are allocated shows an increase in number, if not in actual rates. Of the total number of deaths assigned to this title, 25,802 were of the stomach and duodenum, 14,871 of the uterus, 11,863 of the breast, and 10,420 of the liver and biliary passages.

Deaths due to diseases of the circulatory system increased numerically from 280,403 in 1930 to 294,596 in 1932, equivalent to death rates of 237.5 and 246.2, respectively. This large increase was due, principally, to diseases of the myocardium and of the coronary arteries, angina pectoris; chronic endocarditis, valvular diseases, being the only cause in this group for which there was a considerable decrease in 1932 from 1930.—U. S. Department of Commerce, Bureau of the Census. Sept. 28, 1933.

The Incidence of Endemic Goiter in Northeastern Germany—Analysis of records of physical examination of applicants for immigration visas by residents of the five consular districts

of Berlin, Leipzig, Dresden, Breslau, and East Prussia, brings to light some interesting facts on the incidence of endemic goiter in Northeastern Germany.

The ages of those examined ranged between 3 weeks and 91 years. Thus, 36 males and 53 females were under 5 years, while 83 males and 198 females were over 50 years of age. Larger numbers were included in the intermediate age groups.

The tabulation of results indicates that there were 326 definite thyroid enlargements among the 1,976 males, a percentage incidence of 16.5. Of the thyroid enlargements found, 61.3 per cent, while definite in character, were classified as very slight in size. Only 8 adenomatous goiters were found among the males. Among the 2,320 females there were 727 thyroid enlargements, a percentage of 31.3. Of these, 46.6 per cent were classified as very slight, while 9.4 per cent were definitely adenomatous in character.

In the three lower age groups, namely, from birth to 14 years, approximately the same incidence of thyroid enlargement appeared to prevail in both sexes. However, it is probable that the inclusion of greater numbers of children would have altered the result, making the affection somewhat more frequent among girls. The approximation of the incidence curves of both sexes indicates a considerable amount of endemic goiter in the general population. After 15 the incidence of thyroid enlargement is consistently greater among the females of each age group.

The statistical data show that among boys, the incidence of endemic goiter is greatest between the ages of 10 and 14 years. Among females the incidence of goiter is highest between ages 15 and 24 years. After age 24, the goiter incidence among females is between 10 and 22 per cent higher than among males of corresponding ages.

During the examinations in Berlin, 3 females and 1 male were found to be suffering from Graves' disease. In three additional instances thyroidectomies had been performed at varying periods prior to the examinations without, however, relieving the symptoms of the disease. While the number of persons in the present series who were actually suffering from Graves' disease was relatively small, it is believed that the disease is comparatively frequent in Germany for frank cases are often seen in public.

Additional observations were made for the purpose of determining whether a relationship exists between intelligence and thyroid status. Although many intelligence tests were applied and a number of mentally defective individuals were encountered, there was no evidence that thyroid enlargement or malfunction is commonly associated with mental inferiority.

The results of a survey (similar to that in Northeastern Germany) made of applicants for immigration visas in Northern Ireland revealed a percentage incidence of endemic goiter of 11.8 among males, and 27.4 among females for that territory. Further analysis shows the incidence of endemic goiter in Northern Ireland to be definitely lower in both sexes and for practically every age period than in Northeastern Germany. Just why this should be so is a matter for speculation, as considerable areas of both countries are adjacent to the sea, and it might be expected that goiter would be relatively infrequent in its occurrence.

As shown by the results of the thyroid survey of persons of all ages endemic goiter prevails to a considerable extent in Northeastern Germany, especially among girls and women. Nearly 3 per cent of the females examined had goiters of adenomatous character. Evidences of toxicity were noted in 14.7 per cent of these.

In view of the considerable incidence of endemic goiter and the presence of toxic adenomata, especially among females, prophylactic endeavor appears to be indicated in this section of Germany. Some attention might likewise be directed to the prophylaxis of Graves' disease, which affection is also encountered.—*Pub. Health Rep.* 48:1074–81 (Sept. 1), 1933.

Infant Mortality in Pennsylvania in 1932—There were 10,103 deaths under 1 year of age in Pennsylvania in 1932. This total as well as the rate of 60 per 1,000 live births established a record low mark in infant mortality. A 15.1 per cent decrease from 1931 was recorded in the infant deaths last year, and a 46.5 per cent reduction was registered from 1922. In 1906, the first year of registration in this state, 1 in every 4 deaths was an infant death, while in 1932 the ratio was 1 in approximately every 11 deaths. During the past 3 years the highest infant mortality rate occurred twice in March and once in December, and the lowest in June and July. The excessive rates in the winter months are due to the incidence of respiratory diseases in that season, and the high rates in the late summer and fall are caused by the prevalence then of the gastrointestinal disorders.

Of the 10,103 infant deaths recorded last year, 5,593 or 55.4 per cent were of infants under 1 month, and, of these, over a third were less than 1 day old.

The five leading causes of infant mortality in 1932 were: premature birth with a death rate per 1,000 live births of 16.0, pneumonia 9.9, congenital malformations 6.8, diarrhea and enteritis 6.1, and injury at birth 4.3. Comparison of these rates with those for 1906 shows that the greatest reductions in infant mortality have taken place in the gastroenteric and respiratory diseases. In 1906, diarrhea and enteritis was the leading one of these five causes of infant mortality, with a death rate of 47.7 per 1,000 live births; pneumonia followed with a rate of 18.6; then came premature birth 16.7, congenital malformations 9.0, and injury at birth 3.4. It may be noted with considerable concern that the death rate from premature birth has shown very little improvement and that the death rate from injury at birth has increased instead of decreased, during this period of 26 years.—*Vital Stat. Bull.*, Pennsylvania State Dept. of Health, Sept., 1933. pp. 5–6.

Marriage and Divorce in Wisconsin in 1932—With the single exception of 1918 there were fewer marriages in Wisconsin during 1932 than for any year since 1887 when the first statistics on marriage were compiled. For 1918 the state recorded only 11,890 marriages and only 14,050 marriages in 1932. Since 1920 when 22,293 marriages were recorded, the marriage rate has steadily declined. The present low rate cannot, then, be attributed wholly to the depression. During the very prosperous years from 1922 to 1929 marriages were declining steadily each year due, in part, it is believed, to marked changes in the economic status of women and the apparent lack of interest in home making on the part of both sexes.

The number of divorces granted and marriages annulled in 1932, as compared with 1931, decreased nearly 300 and is the smallest number reported since 1924. This can probably be charged directly to the depression and the inability to obtain funds to pay for the divorce action. There seems to be no evidence of increased regard for the sanctity of the marriage contract nor any better appreciation of the divorce evil and what it means to civilization. The facts are that many sincere, socially-minded persons, particularly

some prominent sociologists, are now advocating a plan to make marriage more difficult and divorce less difficult. It is granted that the prevention of hasty marriages, if made nation-wide, will reduce the number of divorces even if the divorce laws are not changed. The crying need is for uniformity in both marriage and divorce laws.

Several attempts to liberalize the Wisconsin marriage laws at the 1933 session of the legislature so as to make them conform with the "easy marriage" laws of neighboring states were defeated, making it reasonably certain that there will be no changes in the marriage laws for at least 2 years. If Illinois and Iowa would require a 5-day waiting period after the application for a license is filed, there would be very little demand for amending the Wisconsin laws.

In 1932 with a total of 2,404 divorces and annulments recorded, the husband was the complainant in 452 cases and the wife was the plaintiff in 1,952 cases, while for 1931 the husband was the plaintiff in 553 cases and the wife in 2,149 cases. Over a series of years the wife brings the action and is granted the divorce in about four cases to one for the husband.

The chief causes for divorce as stated in the court action during 1932 were: cruelty in 1,622 cases, desertion in 395 cases, nonsupport in 189, drunkenness in 42, and adultery in 28.

The divorce rate per 10,000 population in 1932 was highest in Lafayette county with a rate of 18. The following counties also had comparatively high rates: Dane 13.8, Douglas 13.7, Florence 13.1, Juneau 13, Oneida 15.3, Rock 15.8, Washington 14.9, Waukesha 13.6 and Wood 13. The divorce rate was low in the following counties: Burnett 2.9, Calumet 2.4, Dunn 2.2, Iowa 2.5, Kewaunee 1.9, Marquette 2.2, Oconto 2.7, Pepin 2.7, Taylor 2.8, Trempealeau 2.1, Vernon 2.8, and Washburn 2.7. The divorce rate for the entire state in 1932 was 8 for each 10,000 population or nearly 1 divorce for each 6 marriages solemnized during that year.

Fifty per cent of the divorces in Wisconsin last year were for couples not married in this state. For many of the counties bordering on the states with comparatively lax marriage laws, more than 70 per cent of the divorces were for people married out of the state but having a legal residence in Wisconsin. In some of these counties with a high percentage of out-of-state marriages, investigations show that as many as 85 per cent of the marriages lasting less than 5 years were among persons married in adjoining states. Classifying the 1932 divorces according to the duration of marriage, the report shows that 60 per cent of the divorces were granted before 10 years of married life; of these, the greatest number occurred among persons who had been married for from 5 to 9 years. There is no material change in the duration of marriage now as compared with twenty years ago. —Wisconsin State Board of Health *Bull.* 5:15–17 (July-Sept.), 1933.

INDUSTRIAL HYGIENE

The Pathologic Reactions in Various Pneumoconioses—The present knowledge regarding types of pneumoconiosis is limited by insufficient autopsy material. The diseases caused by pure chemical substances, however, are predominantly either linear (caused by inhalation of inert foreign matter), nodular (apparently confined to silicosis), and diffuse (as in asbestosis cases) in character. Reaction to dusts may be divided into 5 general phases: (1) early diffuse parenchymatous disease due to accumulation of phagocytes and local inflammatory changes in the adjacent connective tissues, (2) linear peri-lymphatic proliferation, (3) beading of the trunk due to chronic proliferative changes in associated lymphoid tissues, (4) enlargement of the mediastinal lymph nodes due to proliferation of the local connective tissues, and (5) late chronic proliferation and nodule formation in the finer connective tissues of pulmonary parenchyma. The different phases are accentuated by the various types of pure dust. Silica produces all the above mentioned reactions.

Animal experimentations indicate that a high atmospheric concentration (200 million particles per cu. ft. of air) of exceedingly fine particles of silica can develop acute silicosis within a period of from 12 to 18 months, with an exposure of 8 hours per day.

Several examples of the pathologic changes due to inhalation of mixed dusts such as coal and silica, and granite dusts are given the characteristic reaction of non-siliceous dusts in a peri-lymphatic cellular connective tissue formation. When tuberculosis infection sets in nodular lesions resembling typical silicosis were formed without stint throughout all portions of the lung.

Experimental studies with guinea pigs showed that exposures to heavy concentrations of granite dust for a period of 7 months would not produce nodular fibrosis but that exposure to pure quartz dust did develop lesions. In still other experiments it was shown that 74 per cent of the animals inhaling pure silica reactivated their partially healed primary tuberculous infection while with granite dust only 26 per cent developed progressive infection.

These studies, together with the Barre experiences, indicate that only the free silica content of granite dust is of significance in the production of the disease and that the other constituents act as inert diluents. Granite pneumoconiosis, develops much more slowly than that produced by pure silica. It is also possible that the non-siliceous content of the dust may cause a biologic reaction to modify the characteristic effects of pure silica.—Leroy U. Gardner, *J.A.M.A.* 101, 8:594–598 (Aug. 19), 1933. L. G.

Etiology of Silicosis—The primary cause of silicosis is free silica in the form of dust. The dust particles must be less than 10 microns in size to penetrate into the lungs. Silicosis i a disease which develops very slowly (2 to 10 years) and produces a condition of extraordinary susceptibility to tuberculosis. The rate of development of the disease is determined by the dust concentration of the inspired air, silica content of the dust and length of exposure. A few of the contributing causes to silicosis are: (1) preëxisting pulmonary disease other than silicosis,

(2) nasal obstruction or other conditions causing mouth breathing, and (3) conditions of lowered body resistance.

A world-wide distribution of silicosis as an occupational disease has been occasioned by the introduction of pneumatic tools for rock cutting and by sandblasting methods in foundries and potteries. Due to the difficulties encountered in diagnosing silicosis cases the necessity of reviewing the occupational history of the patient for silica exposure is emphasized.—A. J. Lanza, *J.A.M.A.* 101, 8:583–584 (Aug. 19), 1933. L. G.

The Clinical Manifestations of Silicosis—This is a study based upon the examination of 7,722 miners in the Picher District. There was a striking similarity of observations to those noted in the silicosis study in South Africa.

The three stages of silicosis are described and discussed. The cardinal symptom noted was shortness of breath, and the most characteristic sign was decreased chest expansion. In the first stage of silicosis the men usually appeared to be in robust health. No definite physical signs in the chest could be noted in most cases but there were certain constant clinical signs present. There were: (1) lack of elasticity of chest wall during respiration, (2) somewhat reduced vital capacity, and (3) a certain characteristic type of breath sound.

In the second stage of silicosis there is a definite shortness of breath on exertion. Pains in the chest are frequent complaints. An increase in coughing, expectoration, hemophysis, night sweats, loss of strength and appetite were noted. The men in general, however, appeared to be in good health. The characteristic roentgenographical appearance is a generalized medium sized mottling throughout the lung fields.

In the third stage the shortness of breath is marked and distressing even on slight exertion. The individual's capacity for work becomes impaired. There is a greatly decreased chest expansion, loss of weight, increase in pulse rate, and a dilatation of the heart. Radiographs show a dense fibrosis present in the lungs.

There were only 32 third-stage silicosis cases found. Among the 7,722 men examined 267 cases showed silicosis complicated by clinically active tuberculosis.—R. R. Sayers. *J.A.M.A.* 101, 8:580–583 (Aug. 19), 1933. L. G.

Fundamentals of Asphyxia—The stages of asphyxia are: (1) deficiency of oxygen, (2) deficiency of carbon dioxide, and (3) a series of stages leading to autolysis, fatty degeneration and necrosis. For the second stage in asphyxiation the author suggests a new term, "acarbia," defined as the asphyxial diminution in the bicarbonates of the blood.

Chemical changes occur in the blood during asphyxiation, first an alkaline and then an acid shift. Under slight oxygen deficiency in the first state of asphyxiation the increased respiration over-ventilates the blood. The loss of carbonic acid then leaves blood relatively alkaline and a compensatory decrease of bicarbonates or acarbia occurs.

The upsetting of the acid-base equilibrium of the blood, as by asphyxiation, has been recognized as a condition known as "acidosis." This condition, however, does not indicate the balance of acid and alkali in the body, as is the popular opinion, but is an index of the state of the respiratory center.

Experimental evidences with dogs have shown that asphyxiation is not a condition of acid intoxication or "acidosis." In a progressively diminishing supply of oxygen a compensatory

acarbia develops with the diminishing carbon dioxide content of the blood (due to over-breathing), and no increase in lactic acid in the blood was noted until the oxygen had fallen to the asphyxial level and the animal was approaching death.

Carbon dioxide in varying concentrations (7 per cent mixture of carbon dioxide with oxygen for resuscitation cases, and a mixture of 20–30 per cent of carbon dioxide in oxygen, or even pure carbon dioxide in cases of deep post-anesthetic depression) has been administered with great success. Carbon dioxide not only stimulates respiration but hastens recovery of normal conditions. It does not "intensify the acidosis" as one might believe in considering the acid-base equilibrium of the blood from the standpoint of physical chemistry.—Yandell Henderson, *J.A.M.A.* 101, 4:261–266 (July 22), 1933. L. G.

Occupational Anthrax Reported in Germany—

	1931		1932	
	Total No.	Fatal	Total No.	Fatal
Agriculture	87	5	63	6
Hides and Skins	19	4	7	..
Hair	8	2	6	..
Various	4	..	6	3
	118	11	82	9

Indust. & Lab. Inf., LXVI, 11:327, and 12:402 (June 12 and 19), 1933. E. R. H.

Silicon Dioxide Content of Lungs in Health and Disease—The presence of silicon dioxide was first chemically demonstrated in the lungs of a razor grinder in 1865. Since that time varying concentrations (from 3 to 56 per cent depending upon concentration and length of exposure to silicon dust) of silicon dioxide have been reported in the ashes of normal and diseased lungs. The analyses of the lungs of six gold mine workers in South Africa showed from 9 to 21.7 gm. of ash per lung of which from 29 to 48 per cent was silica while a normal lung contained 0.73 per cent. Since silica is, next to oxygen, the most common element of the earth's crust it is not very surprising to find silica in the normal lung. Silica is a normal constituent of the connective tissue, skin, blood, bones, nails, urine, feces, and saliva of man.

Analyses were made on 21 lung specimens to determine the average silicon dioxide content of lungs. The normal lung was found to contain about 1.13 mg. of silicon dioxide per gm. of dried tissue. Any lung containing over 2 mg. of silicon dioxide per gm. of dried lung indicates undue exposure to a dusty atmosphere. The silicon content of lungs of 8 persons working in dusty atmospheres varied from 2.4 mg. (machinist) to 26.0 mg. (granite cutter) of silicon dioxide per gm. of dried tissue.

A chemical examination of the lungs for silicon dioxide is suggested in cases coming to autopsy as an aid to a correct diagnosis of silicosis.—William D. McNally, *J.A.M.A.*, 101, 8:584–587 (Aug. 19), 1933. L. G.

Roentgenologic Aspects of Pneumoconiosis and Its Differential Diagnosis—The definition of pneumoconiosis and its most frequent form of silicosis in any simple term is inadequate in the light of recent pathologic and histologic studies and added clinical experience. It is admitted, however, that any comprehensive definition of silicosis or even of pneumoconiosis in general would be too complex for practical use. The proper diagnosis of pneumoconiosis, therefore, becomes a difficult one as well as of extreme importance in a medico-legal problem.

This paper describes and discusses

the differential diagnosis of pneumoconiosis by studying the pathologic phases or stages by means of the roentgenogram. The following conditions simulating pneumoconiosis are described: (1) the perivascular, peribronchial-lymph node phase, (2) passive congestion of the lungs as a result of cardiac decompensation, (3) passive congestion associated with coronary thrombosis, (4) advanced bilateral bronchiectasis, (5) asthma, (6) infiltrating or permeating malignant metastases, (7) polycythemia or erythemia, (8) mycotic infections, (9) nodular metastatic malignant conditions of the lung, (10) actinomycosis, (11) sporotrychosis, and (12) leptothrix infection.

The association of primary bronchogenic carcinoma in connection with pneumoconiosis is discussed with a review of 3 case histories. The predisposition of the Schneeberg and Joachimstal miners to bronchogenic carcinoma is discussed, but the authors feel that radium emanation and arsenic are the probably etiologic factors instead of pneumoconiosis. Further statistical data are necessary before positive proof of the causative factor can be determined.—Henry K. Pancoast and Eugene P. Pendergrass, *J.A.M.A.* 101, 8:587–591 (Aug. 19), 1933.

L. G.

The Radiologic Recognition of Heart Disease in Pneumoconiosis—This article with 4 case reports and accompanying chest roentgenograms concludes as follows:

1. The roentgenologic sign of hypertrophy of the pulmonary artery and the right ventricle is described, and its importance emphasized.

2. Five cases, with their roentgenograms, are presented to demonstrate how this sign may be utilized to diagnose right ventricular hypertrophy due to pneumoconiosis. Electrocardiograms were made in 4 of these cases, each of which presented right axis deviation.—John M. Dyson, *Am. J. Med. Sc.* 737: 165–169 (Aug.), 1933. E. R. H.

FOOD AND NUTRITION

Vitamin C Content of Strawberries and Strawberry Ice Cream—Guinea pigs weighing between 280 and 325 gm. were used as experimental animals. Two lots of strawberries were fed—Klondike and Howard Supreme. The fruit was fed as follows: 2 and 4 gm. of fresh Howard Supreme strawberries; 2 and 4 gm. of fresh Klondike strawberries; 3 and 6 gm. of frozen strawberries with sugar; 2 parts berries to 1 of sugar; 10 and 15 gm. of strawberry ice cream, containing 30 per cent frozen-pack berries as above; and 2 and 3 gm. frozen strawberries, no added sugar. The lowest quantity (2 gm.) fed fully protected from scurvy and produced large weight gains.

Apparently, there was no loss in the freezing and storing processes either with or without sugar. When frozen strawberries were used in strawberry ice cream, they retained their original antiscorbutic potency.

Decreased gains in weight were noted when the fruit was fed in the large doses. This effect has been noted in other vitamin C assays and the authors suggest it may be due to the disturbing effect on the digestive and nervous systems and to the unbalancing of the diet. In spite of poor or negative

weight gains, no scurvy was found on autopsy in any of the animals.—C. R. Fellers and M. J. Mack, *J. Indust. & Eng. Chem.* 25:1051 (Sept.), 1933.

Studies on the Rôle of Zinc in Nutrition—The difficulty of devising diets zinc free or containing only negative amounts of this element has resulted in a lack of conclusive evidence as to the rôle which zinc plays in animal nutrition in spite of its recognized occurrence and biological effect on plants.

Spectrographic examination of the ash of all the foods was employed. A rough approximation as to the content of zinc was undertaken by spectrography, supplemented by the turbidimetric method for quantitative determination. By comparison of both of these tests and painstaking treatment of the rations, the authors were able to secure diets in which the zinc content was less than 1 p.p.m.

Scrupulous care was taken to avoid contamination from the cages and other sources and a list is given of the zinc-free diets. A number of variations in the diets were employed both with zinc-free ration and those to which definite amounts of zinc had been added.

Since growth of the experimental animals took place on diets in which the zinc was present in approximately 1 part in 10 million, it is concluded that zinc is probably not essential as a nutritional factor in the case of the rat. Natural reproduction was more successful in these experimental rats although conception and gestation took place in the case of the parents on a zinc-free diet. Their young had greatly diminished compared to litters from the stock diet.

Analysis of the bodies of the rats showed that the zinc content of the stock rats and others on zinc-containing rations was roughly the same, while rats on the zinc-free diet lost both in proportion and in actual amounts of zinc in the body.—John M. Newell and E. V. McCollum, *J. Nutrition,* 6:289 (May), 1933.

Vitamin Studies VI. Influence of Fertilizers on the Vitamin C Content of Spinach—After extensive investigation of the development of scurvy in guinea pigs, the authors reached certain conclusions regarding the effect of fertilization, as well as lime content of soil, on the vitamin C content of spinach.

When the soil is limed to the neutral point without the addition of fertilizers, spinach has a correspondingly low vitamin content, with balanced fertilization the highest. If any of the ingredients of the fertilizer, potash, phosphoric acid or nitrogen is in excess, in every case the result is a lessening of the vitamin content. Excess of phosphoric acid has the smallest influence, excess nitrogen the greatest.

It will be seen what a significance these findings have on the cultivation of these vegetables for the diet as well as those designed for canning. The cultivation of spinach takes place under world-wide conditions which vary, so that the vitamin C content not alone corresponds to the liming and fertilization of the soil but is affected by secondary influences of the soil which affect the nutritional balance in the plant. Only the cultivation of experimental plants under absolute conditions would guard against deceptive conclusions as to the establishment of the vitamin content.—F. V. Hahn and J. Görbing, *Ztschr. f. Unter. der Lebens.* 6, 65:39 (June), 1933.

Comparative Effect of Tomato and Orange Juices on Urinary Acidity—Previous experiments (*J. Nutrition,* 5:103, 1932, and *J. Nutrition,* 5:519, 1932, abstract, this *Journal,*

22:1185, 1932) showed that grapes, figs and raisins exerted a marked effect on the urinary acidity. Because of their general use in the diet it was considered desirable to ascertain the effect of daily ingestion of similar amounts of tomato and orange juices.

The present experiments in which 3 normal young men were used, were of 12 days' duration. Each experiment was divided into two consecutive periods. For the first 5 days each person received only the basal ration. During the next 7 days each received, in addition, 1,000 c.c. of either tomato juice or orange juice. The basal diet was the same as that used in the previous experiments and the 1,000 c.c. portions of the juices were used in order that the results might be comparable with the previous studies in which 1,000 c.c. portions of grape juices were used.

With both the tomato and orange juices, there was a generally uniform increase of pH of the urine following their addition to the diet. This increase was such that the pH during the last 3 days of the experiment was from 0.95 to 1.3 pH units higher than that of the 4th or 5th day of the experiment. The tomato juice produced an average change of 1.2 pH units, while the orange juice caused a change of about 1.05 pH units.

Corresponding decreases in both the ammonia excreted and in the total acidity were noted. The average changes produced by the two juices were approximately the same. When either of these juices was added to the basal ration, an increase occurred in the organic acids excreted. The average oxidation of the organic acids of tomato juice was 90.7 per cent while that of orange juice was 93.8 per cent. There appeared to be a correlation between the alkalinity of the ash and the reaction of the urine. A more basic reaction was associated with the higher ratio of soluble alkalinity to insoluble alkalinity of the ash. The tomato juice exhibited the higher ratio and produced a somewhat greater change in reaction.—L. G. Saywell and E. W. Lane, *J. Nutrition*, 6:263 (May), 1933.

The Calcium Retention on a Diet Containing Leaf Lettuce—Two healthy young women, weighing 52.3 and 50.2 kg., served as the subjects in this experiment. Before participating in the lettuce study they ate a quantity of lettuce which would be necessary to meet the calculated requirement for calcium equilibrium and which would represent a high percentage of the total calcium. During this time the subjects abstained from other vegetables and fruits, but ate similar amounts of food.

During the leaf lettuce experimental period they consumed 54 gm. protein, 83 gm. fat, and 263 gm. carbohydrate which yielded about 2,000 calories. During the pasteurized milk period, subject I consumed 53 gm. of protein, 81 gm. of fat, and 269 gm. of carbohydrate, while subject II consumed 53 gm. of protein, 83 gm. of fat, and 260 gm. of carbohydrate.

The diet for the study of the calcium retention of leaf lettuce consisted of the ordinary strain of Grand Rapids leaf lettuce, lean round beef, soda crackers, butterfat and sucrose. In the milk study the diet was the same except that pasteurized whole milk replaced the lettuce, and apples were added. Distilled water was used *ad lib.* for drinking.

The calcium from the lettuce furnished 93.0 per cent of the total calcium of the diet for one subject and 92.9 per cent of the total calcium for the other, while the calcium from the milk furnished 88.4 per cent for one subject and 88.3 per cent for the other. The calcium of the fresh green leafy lettuce was superior in its utilization to that of pasteurized whole milk. Calcium balances show a daily average as follows:

	Lettuce Diet	*Pasteurized Whole Milk Diet*
Subject I	0.138	0.015
Subject II	0.173	0.032

—Marguerite G. Mallon, L. Margaret Johnson, and Clara R. Darby, *J. Nutrition*, 6:303 (May), 1933.

Vitamins C and A in Blueberries—Two varieties of blueberries were employed—*Vaccinium corymbosum*, the high-bush cultivated type, and the *V. pennsylvanicum*, the low-bush or dwarf type. Scurvy score was determined after the end of each feeding period by chloroforming the animals and examining for lesions. The negative controls died in from 26 to 33 days with an average scurvy score of 16. Two seasons' crops—1931 and 1932—were employed and the berries obtained from Massachusetts, Maine, and Newfoundland.

Preliminary tests on vitamin A on Maine quick-frozen dwarf type blueberries indicated no significant evidence of protection, with the conclusion that these blueberries contained only a trace of vitamin A. In the case of vitamin C, two successive crops of high-bush blueberries indicated a minimum protective dose of 4 to 5 gm. with little or no loss due to quick freezing. Both season's crops of the Massachusetts high-bush type, blanched and canned, with or without vacuum, resulted in a severe scurvy. With Massachusetts high-bush blueberries for two seasons canned without blanching and in vacuum, there was no scurvy. Low-bush blueberries showed much less vitamin C and variations both seasonal and regional with the best results on the Maine low-bush type. One sample of canned low-bush blueberry showed very little protection from scurvy—C. R. Fellers and P. D. Isham, *J. Agri. Res.* 47:163 (Aug. 1), 1933.

Vitamin A Content of Milk Irradiated by Various Carbon Arcs—In order to determine the destructive effect on vitamin A of ultra-violet rays, 3 types of carbon arcs were used—the therapeutic "C" carbon, the magnesium impregnated carbon, and the Sunshine carbon. Milk of 1.2 per cent butterfat content was irradiated in thin films and then desiccated and hermetically sealed in jars under inert gas. The exposure varied from 8 to 48 seconds.

After the experimental rats showed vitamin A deficiency, the reconstituted dried milk was fed at levels of 2.5 and 5 c.c. daily. The growth curves on lots of 4 to 15 rats on the experimental feeding period showed practically no variation at either the 2.5 or the 5 c.c. level, as to destruction of vitamin A. The conclusion was drawn that there is no significant destruction of vitamin A in milk containing 1.2 per cent butterfat on direct irradiation under conditions of the test.—R. C. Bender and G. C. Supplee, *Am. J. Dis. Child.* 45:995 (May), 1933.

CHILD HYGIENE

CHILD HEALTH AND CHILD WELFARE IN ENGLAND

RICHARD ARTHUR BOLT, M.D., DR.P.H., F.A.P.H.A.

Director, Cleveland Child Health Association
At Present on Oberlaender Trust Award to Study Child Health and Welfare in Germany and Austria

TWO important conferences on child health and welfare were held in England this summer which the writer had the privilege of attending. The Congress of the Royal Sanitary Institute convened at Blackpool from June 17 to June 24, at which time one of its sections was devoted wholly to problems connected with Maternity, Child Welfare and School Hygiene. The other sections on Preventive Medicine; Architecture, Town Planning and Engineering; Veterinary Hygiene; National Health Insurance; and the Hygiene of Food contributed directly or indirectly to child hygiene. The discussions evoked by the formal papers were right to the point and timely. The entire Congress moved with a precision and orderliness characteristic of British Medical Officers of Health.

The Sixth English-Speaking Conference on Maternity and Child Welfare, organized on behalf of the National Council for Maternity and Child Welfare, under the devoted and able leadership of Miss Jane Halford, took place in London, July 5, 6, and 7. On two days preceding this conference a post-graduate course was conducted for the benefit of those attending so that they might observe first-hand the technics employed at the Royal National Orthopaedic Hospital, Queen Charlotte's Hospital (Maternity) Isolation Block, North Kensington Women's Welfare Center, Mothercraft Training Society and the Home, and New Princess Elizabeth Hostel. The whole conference brought out clearly the intimate relationship which exists in England between voluntary and official organizations for maternity and child welfare. The fact that advance copies of the conference papers were in the hands of the delegates made possible an intelligent and very lively discussion of each subject.

The address on the Training and Qualifications of Nursery Nurses by Viscountees Erleigh,[1] President of the section on Maternity, Child Welfare and School Hygiene of The Royal Sanitary Institute, so well describes the development of a rapidly growing movement that it may be of interest to quote at considerable length in this place:

> The movement for the provision of skilled and trained care of the normal healthy child was commenced in 1892, when Mrs. Walter Ward first conceived and carried through the formation of the Norland Institute for private nurses. . . . Far-seeing women even so long ago realized the demand that was just formulating itself and, as has been amply proved, was bound to increase, for the services of educated women trained to care for the physical and mental needs of the average baby and growing child.
>
> They also appreciated that there were a number of such educated women in the country, who would welcome the opportunity of training, and of the career which has since become known as that of the college-trained, or nursery nurse. . . .
>
> Those who came forward to deal with the

situation, with great wisdom decided to staff the homes that were needed, with young girls of good education, who after such training would be in a position to earn their own living. At just this psychological moment there was simultaneously a great demand, on the part of young women, for independence, and in many homes an economic necessity that the girls should adopt a profession or career. . . .

In 1925 there were 17 colleges and training schools, well known to be efficient and of a high standard of training; but there was no machinery for the interchange of ideas or protection from the numerous little homes that were springing up which, purporting to give a free or nominally free training, took advantage of students coming to them to run their homes cheaply, but gave no real training in return. It was necessary to protect both the established colleges and the prospective students from these conditions.

An Association of Nursery Training Colleges was then formed under the leadership of Hon. Mrs. St. Aubyn who acted as Chairman of the Executive Committee during the first difficult years of its organization.

The Council was constituted so that the representatives of the colleges, the principals themselves, and their matrons or wardens, representatives of the nurses, and representatives of the employers (that is, the mothers) all found a place on it. This body then formulated a standard to which any affiliated college must attain. This was the first attempt to lay down a general standard for the training of nursery nurses—a matter of the highest importance. The fact of affiliation to the Association of Nursing Training Colleges from then on guaranteed that a college was competently run, and the training given sound. . . . As the work of the Association developed it became apparent that in order to sift the numerous applications for affiliation from training schools, and to be certain of maintaining the standard of training among the now numerous colleges affiliated, the Association must appoint its own inspector.

This inspector's chief duty is to report on the training given to students; for while many colleges are under inspection from the Ministry of Health or Local authorities as regards their sanitary arrangements and care of the children under their charge, no inspector existed whose duty it was to inquire into the training of the students received. The results have shown that the appointment was a wise one.

Last year the Association took a further and most important step—the arrangement in conjunction with the Royal Sanitary Institute of a central examination for nursery nurses. During the course of the year a number of meetings were held at which the matter was fully discussed. Every college, of course, had its own internal examination, both theoretical and practical, and granted certificates to its students who proved successful. A number of the younger colleges, however, had adopted the examination set by the National Society of Day Nurseries as their theoretical examination, and the demand came chiefly from them that the Association should have its own examination. The Association therefore set about discovering ways and means, and finally, after consultation with the Royal Sanitary Institute, decided that they could have no better medium than the Society for conducting their central examination. A syllabus was prepared by a joint committee, and in particular Dr. Fenton gave invaluable help with practical suggestions.

It was agreed that the examination should be optional and not compulsory, and that it should be based on the widest principles of child care and training; in fact that it should embrace all such matters as were considered fundamentally essential in the training of the nursery nurse. . . . Particular care has been taken to keep the syllabus on general lines so as to avoid the possibility of interfering with the special characteristics that particularize many of the colleges. The Association does not want to turn out a regimental true-to-pattern type of nursery nurse. . . .

The examination consists of both written and *viva voce* tests, and the examiners are drawn from members of the Council of the Association of Nursery Training Colleges, and from nominees of the Royal Sanitary Institute. The first examination took place in London last July, and the results were most gratifying. . . .

This year a further advance is being made in the addition of two separate advanced papers, one on child psychology, the other on child nutrition, which are to be open to students who have passed the central examination.

The Association is deeply concerned in the status and welfare of the nurses, and for this reason has opened a club in London to cater to their needs when they are out in posts. It is its object and great desire to raise the status of nursery nurses in every respect, so

that such nurses may become recognized by the public at large for what they are—one of the most valuable and necessary factors in the upbringing of the future generation.

In his presidential address to the Sixth English-Speaking Conference on Maternity and Child Welfare, Sir George Newman, Chief Medical Officer to the Ministry of Health and the Board of Education reviewed the progress made in child hygiene in England and Wales during recent years. He summarized the gains made as follows: [2]

1. The burden of infant mortality in England and Wales, though coming to us from the Middle Ages, has been halved in a single generation (*i.e.*, since 1910).

2. This saving of life under 1 year of age has been least in the first month of the first year, and particularly in the first week, and greatest in the subsequent 11 months, a significant characteristic and an indication of the direction of future work.

3. Infant mortality increases with urbanization, from rural to city life, and the urban excess tends to increase throughout the later months of infancy, the months affected by the unfavorable elements of environmental influence.

4. The reduction has been greatest in deaths due to infantile diarrhea and enteritis, to bronchitis and pneumonia, and to whooping-cough, and it has been least in those deaths primarily due to prematurity of birth.

5. Lastly, congenital defects, and principally congenital malformation, have steadily increased in importance among the causes of infant mortality. In 1925 congenital malformation was the certified cause of 3,253 deaths, and in 1931, instead of showing a reduction of, say, 15 per cent (as did the total infant mortality), it showed an increase to 3,494. In fact, the rate of infant death from this cause rose from 3.98 per 1,000 live births in 1921 to 5.53 per 1,000 in 1931. This variation has occurred particularly in the industrial urban districts of the North, and is in part at least assumed to be due to more accurate diagnosis and certification; but the change and its causes need watching, though we cannot pursue the matter on the present occasion.

He stated further:

We must all, State and voluntary movement, work together for better midwifery and the preparatory stages leading up to it, and for much more thorough nurture of the child under 5 years of age—up to the present regarded, I am afraid, all too commonly as a negligible commodity—by home visitation and domiciliary supervision; by much fuller development of maternity and child welfare centers; by means of day nurseries and nursery schools; and by the use of convalescent homes, hospitals or sanatoria for amelioration, discipline, and direct treatment of the little child before its school days begin. When this movement began, the children coming to school for the first time at 5 years of age were as sorry a bunch of human neglect as could be seen, but today they are much better in every way, and it has been demonstrated at Warrington, Willesden, Darlington, Torquay, in Westmorland and elsewhere, that this hopeful change has been directly due to the influence of the maternity and child welfare centres.

REFERENCES

1. *J. Roy. San. Inst.*, LIV, 3:125–128 (Sept.), 1933.

2. *Mother and Child* (Formerly National Health), the official organ of the National Council for Maternity and Child Welfare, for full reports. IV, 5 and 6 (Aug. and Sept.), 1933. Address by Sir George Newman in Aug., pp. 160–164.

CLASSES FOR EXPECTANT FATHERS

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WHO ever heard of classes for expectant fathers? Due to the efforts of the Cleveland Child Health Association the city of Cleveland lately has heard of such classes for men whose wives are pregnant.

Prenatal classes for mothers have been held in this city since 1922 in connection with prenatal clinics. Here the expectant mothers are instructed not only in matters relating to the prenatal period, including personal hygiene of

pregnancy, but also in mothercraft and child care. The instructor of these classes has been asked so many questions by the mothers as coming from their husbands, that it was realized that the men were not only in need of information but actually were seeking it.

After all, the bringing of a baby into the world is a partnership affair, and simply by the act of his wife delivering a baby, no husband is automatically made an ideal father. The men need to be trained as well as the women. Then, too, many mothers, in properly caring for their baby, meet with the resistance of the uninformed husbands. For example, many mothers state that they cannot keep their babies on a feeding schedule for the fathers insist that babies should be fed when they cry.

In this age of economic depression, many mothers are the bread-earners, leaving the fathers at home to care for the children. In such cases the father surely should know how to care for the child. This is a changing age, and many are entering fields of endeavor formerly thought to be restricted to the opposite sex. We hear of classes in cooking for high school boys, and now classes for expectant fathers.

The first class for fathers was established as an experimental project by the Cleveland Child Health Association at the University Nursing District (a teaching center for public health nurses) with the idea that if it proved to be successful the class later might be established in other parts of the city.

Contacts with fathers were made through the prenatal clinics held at the center, through announcements made in the prenatal classes for mothers, through nurses making home calls in the district, and through newspaper publicity.

The first class was held on September 6, 1933, one being held each week thereafter for a total of 15 sessions. No charge is made and any man is welcomed.

The first 3 sessions were held by the writer. They covered the prenatal period. Dr. J. J. Thomas, Clinical Professor of Obstetrics at Western Reserve School of Medicine, is now holding the next 6 sessions, which are devoted to a study of the birth of the baby and its care during the first year of life. I shall then hold three classes on the preschool child, the school child, and common diseases and disorders of childhood. Dr. Oscar Markey, Assistant Professor of Mental Hygiene, Western Reserve University, will conduct the last 3 sessions, covering child behavior problems, discipline, and child guidance.

The class has been very successful, having an enrollment of 35. Each session lasts for 1 hour—from 7:00 to 8:00 p.m. The first half-hour is given over to lecturing and the second half-hour is reserved for individual conferences to discuss privately individual problems. The men are all very interested and have many questions to ask. It is interesting to note that the enrollment includes a graduate of a large state university and a minister. A few of the men come considerable distances from outlying parts of the city to attend the class. It is hoped that this project may be extended in the near future, thus insuring for the community an informed group of fathers.

PUBLIC HEALTH NURSING*

A SCHOOL NURSE WRITES TO THE STATE BUREAU OF PUBLIC HEALTH NURSING

Her Letter—"We have a problem on which we need advice. The Community Chest is going to feed the poor children in our schools. The children are to be chosen by the teachers who make home calls on all their families. The food is served at noon in an empty room. It is prepared, taken to the schools and served by women who are in need of employment and are being helped by the community chest.

"These are the usual menus with some variations:

Monday—Bean soup and crackers, fresh apple, milk.

Tuesday—Jelly and peanut butter sandwiches, apple, milk.

Wednesday—Vegetable soup (ground meat included), apple, crackers, milk.

Thursday—Hot dog sandwiches, stewed fruit, milk.

Friday—Chili and crackers, apples, milk.

"The teachers prefer the milk lunches twice a day for it is not so messy. However, they will do whatever is best for the children. What *is* best?

"The expense was about $100 per month last year. It will be more this year for the food is higher and there are more children to be fed."

Our Reply—"It is hard to say what, in general, should be done about feeding children at school for each community situation is different. The latest and most authoritative advice we have about supplementary feeding is that in the White House Conference Publications, *Growth and Development of the Child,* and *The School Health Program.*

"This report says, 'The school should feel obligated to provide a lunch at school whenever the distance is too great for the children to go home at noon or when they would not receive a suitable lunch if they went home.' This leaves no question about the school's responsibility to furnish a noon lunch for the children who have too little to eat at home.

"There is, however, a question about the value of the mid-morning and afternoon milk lunches. This same publication makes these recommendations:

"'Because it stays so long in the stomach, milk is of questionable value when fed in the middle of the morning at school to children who have poor appetites.

"'Even if breakfasts are inadequate, children should be taught to eat them at home; milk and fruit should be increased in the home diets rather than introducing an extra meal at school.

"'Milk may not be the food needed. The type of food that will best supplement the home diet should be chosen.

"'The wisdom of feeding all children or merely the malnourished should be carefully considered.'

"Have you thought about the most important step in planning—a strong central committee? On this committee should be a representative from the Community Fund to care for financial matters, a representative from the Medical Society, yourself (the school nurse), and the home economics teacher to supervise selection and service of food, someone to represent the school to arrange for selecting and transporting the children and some reliable women of the community to supervise buying and preparation. Such a project as this needs careful planning and organization.

* Please send printed matter or other material relating to public health nursing to Eva F. MacDougall, 6 State House Annex, Indianapolis, Ind.

"You as school nurse can help so much by suggesting time of serving, methods for handwashing, helps for maintaining the right mental attitude of children, parents, and workers toward the project, and by helping to make it an educational affair. You can also help the teachers in their investigating and selection of children by checking with physicians, relief organizations, Red Cross, trustee, attendance officer, etc., and by adding to theirs your knowledge of the home conditions of the children. The selection should be based not on underweight or present signs of undernourishment but on the basis of feeding those children who are not having and cannot have adequate food at home, with the idea of preventing a condition of malnourishment."

V. A. J.

PUBLIC HEALTH NURSES AS HOME HYGIENE TEACHERS

A short time ago we had the chance to attend a Home Hygiene Instructors' Conference given by an American Red Cross Nursing Field representative, and it was very inspiring to see how interested some 30 public health nurses were in the instructions, and how eagerly they took part in discussions.

The majority of the nurses present who were teaching home hygiene classes had never had any training in the principles of teaching, and this institute opened up a new world to them. They were especially enthusiastic about the morning program in which the following "Criteria for Teacher Evaluation" upon which each nurse was asked to grade herself, were discussed:

A. The function of the teacher in the educative process is to guide and direct the activity or experience presented by the teacher with the approval of the pupil or set up, through pupil initiative, so that the best possible results, compatible with the educational objectives, may be attained.

B. In order that the teacher may function with maximum efficiency the following facts must be considered:

1. Strong physique and good health are essential to continuous success in teaching.
2. A pleasing, well-modulated voice and clear enunciation are important qualifications for teaching.
3. The teacher should be well groomed and appropriately dressed.
4. The teacher should use clear and correct English.
5. The teacher should know the subject he is teaching.
6. The teacher should understand and use the principles of good teaching.
7. Among the qualities desirable in teachers, the following are important:
   (a) *Self-control*, the ability to maintain a well balanced poise at all times.
   (b) *Tact*, the ability to handle all sorts and conditions of people with skill and discernment.
   (c) *Decisiveness*, the ability to make a decision promptly and stick to it.
   (d) *Enthusiasm*, an invaluable tonic for both teacher and pupils.
   (e) *Resourcefulness*, the ability to turn an unexpected situation to good use.
   (f) *Sympathy*, the ability to understand and appreciate the point of view of another person.
   (g) *Fairmindedness*, the ability to think impersonally and to act justly.
   (h) *Open-mindedness*, the ability to see all sides of a question.
   (i) *Sense of humor*, skill in handling the humorous situation cleverly.
   (j) *Fairness*, ability to mete justice, sincerity, frankness.
   (k) *Diligence*, adequate preparation to handle the work efficiently.
   (l) *Originality*, ability to enrich the experience with novel variety, interesting materials and activities.
   (m) *Initiative*, ability to put a program across.
8. Teachers should not talk too much. Pupil activity is more important than teacher activity.
9. Teaching is a coöperative project. The problem is the acquisition of the desired knowledge, habits, attitudes, and ideals by the pupil through the skillful guidance of the teacher.
10. Skillful guidance is at all times conditioned by the professional ideals of the teacher-guide.

E. F. M.

FEDERAL FUNDS FOR VISITING NURSING

One of the most important milestones in the history of public health nursing has been reached with the announcement that federal funds will be made available to provide bedside nursing care in the homes of "recipients of unemployment relief."

The announcement affects to some degree most agencies giving bedside care on a visit basis. This care will be paid for from the funds of the Federal Emergency Relief Administration at a flat rate per visit "not to exceed the certified cost per visit established for accredited visiting nurse associations in the state or local district."

The full plan is published by the F.E.R.A. in a bulletin called "Rules and Regulations No. 7" and may be secured from state or local relief administrators. Presidents of state or local professional organizations will be called upon, under the plan, to designate committees to consult with relief administrators on the formation and "adoption of adequate programs for medical, dental, and nursing care in the homes of indigent persons."

Immediately on receipt of the news, the N.O.P.H.N. sent out a memorandum to State Health Departments; Presidents of State Organizations for Public Health Nursing; Presidents of State Nurses' Associations; and to its own corporate agency members.

Long before this plan was made public, representatives of the National Organization for Public Health Nursing were called into consultation with Harry L. Hopkins, F.E.R.A. administrator, in relation to the establishment of the principle that bedside nursing care should be provided from public funds for those in families of the unemployed on relief funds who are sick at home.—News Release—National Organization for Public Health Nursing, Oct., 1933.

EDUCATION AND PUBLICITY*

HEALTH DEPARTMENT LEADERSHIP THIS FALL

THE local Health Department has a fresh opportunity this fall for expressing leadership in the field of public health education.

The calling of a conference or a group of conferences of local health agencies and coöperating groups could be one useful form of leadership.

United We Stand—And Go Forward—Get and give a perspective of the winter's activities in health education by calling a conference, or several conferences in larger cities. Invite all health agencies, all social agencies concerned with any aspect of health, and the varied organizations of adults and young people which have health as an accepted feature of their program.

The representatives might be cautioned to restrict their statements to purely health education activities. Each might be asked to answer as concisely as possible such questions as these:

What subjects will you emphasize?

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

What audiences or groups do you expect to reach?

What will you do in the way of talks, printed matter, bulletin boards, articles in bulletins or house organs, motion pictures, etc.?

Where will you get your materials?

What information do you need?

What special events do you plan?

What coöperation would you like to receive?

What materials would you like others to use for you?

Following each report a few minutes might be given for questions from those present.

In some cities mimeographed summaries of the answers might be desirable and practicable.

Where the health department does not feel free to take the initiative may it not be done by the health council, the council of social agencies, the social work publicity council, or by an individual agency?

Letters to Editors Will Help—Please write letters to newspaper and magazine editors when you like their articles on health and other welfare subjects.

Sincere letters of appreciation from people who have read an article are always welcome to the editor.

Articles in local newspapers have one kind of value to health work. Articles in other types of periodicals, whether they are local or general in their circulation have another kind of value. The two supplement each other in their help to health work.

Nationally circulated periodicals are particularly useful in reaching leaders in the groups touched by their circulations.

Please write to the editors.

How It Looks to Them—The September bulletin of the Social Work Publicity Council contains examples of the effective interpretation through experience stories. A letter to the editor in *New York World-Telegram*, August 22, is quoted with this comment:

> The skill in the letter lies in his picking out one point which epitomizes his feeling of helplessness as month after month spent in bed goes by. "When we are well we take pants as a matter of course. They are just the things that we wear in order to keep up with the Joneses. But maybe we never have realized that it is possible to develop a real affection for pants. You get so you lie awake at night in a hospital and keep saying to yourself: 'Oh, if I only could have a pair of pants!' When the nurse comes in you say as nonchalantly as though you were reaching for a Murad: 'Good morning, Miss Brown. Will you kindly bring me my pants?' Certainly she won't. Your clothes have gone into hiding, feeling naked and ashamed, no doubt, because there's nobody inside of them. Well, one morning the nurse came into my room at Grasslands and said: 'We are going to let you get up and dress today.' Just think of that! After 13 months I was to be permitted to wear pants. Not only pants, but a shirt, a coat and a vest—a tie, even."

Radio Coöperation—D. Oberteuffer, professor of physical education, Ohio State University, Columbus, writes about a project in

> Radio broadcasting over our University station, during which periods we will give current events and topics of public interest relating to personal and public health. I am interested, of course, in making these broadcasts scientifically accurate first of all, and interesting to the laymen at the same time. If, from time to time, your association distributed literature of one kind or another which might be suggestive of some material for these broadcasts, I would be happy to receive such and to use it with proper care and due credit to your organization.

Please address Professor Oberteuffer as noted above.

Local Motion Picture Clinics—The amateur movie offers a practically new medium for reaching many audiences with practical health teaching or the presentation of the activities of health departments and other health agencies.

Showings of pictures produced in other cities offer the simplest and best

material for studying amateur picture technic.

The health officer could take the initiative, or the health council, the health division of the council of social agencies, or an individual health worker. Gather a group of health workers (others interested in amateur pictures would be helpful), and arrange for screening pictures which may be available. Discuss each picture, searching for lessons in picture technic, and their application to the problems of those present. Make notes which might interest the producer of the picture discussed.

The editor of this department will give information about pictures from other cities.

Planned Objectives for Literature Distribution—The 1929–1933 report of American Society for the Control of Cancer states that—

> Before 1929 the Society was broadcasting great quantities of its literature to those who, for one reason or another, requested it. On paper this produced a somewhat impressive showing. With the appointment of additional field representatives, however, it soon became evident that such a procedure measured the gross rather than the net educational value of our work.
>
> There has, therefore, been developed a policy by which the distribution of literature to specific groups for a definite objective has gradually replaced the former method. Since education may be fairly measured by the number of minds affected, just as marksmanship may be evaluated by the number of hits on the target, the change is a wise one. It has further led to a more carefully prepared type of literature. Each new pamphlet is published to fill a definite educational need.
>
> . . . At the present time, more and more of our distribution is being made at the specific request of our state chairmen and field representatives and is an integral and important part of planned and organized local educational programs. The indiscriminate and extensive broadcasting of printed material is folly, both from an educational and a business point of view. While the total amount of general distribution has normally declined, the cost of the literature to be distributed has not declined in like proportion. This is due to the fact that our booklets have been materially improved both in make-up and in size.

The report also tells of a series of 13 brief news releases available for local use. Also—

> A series of 16 radio broadcasts of varying lengths, with instruction sheet, has been prepared and is being widely used, particularly in the southern states where active educational campaigns are now in progress. Radio broadcasts from other sources are being mimeographed for distribution, with the objective of eventually building up an extensive library of such material.

Motion pictures are supplied for medical audiences, as well as exhibits, chiefly for medical groups. Address the Society at 1250 6th Ave., New York, N. Y.

Reporting via Mimeograph—Accompanying the 1932 Annual Report of the Knoxville, Tenn., Bureau of Health is a slip reading as follows:

> This publication was compiled and mimeographed entirely by regular employees of the Bureau of Health who will welcome the receipt of any comments, suggestions, or criticisms.

It is a beautifully done piece of work, quite ambitious in some details—56 pages, 8½ by 10¾ inches, green paper, plus 8 black pages, 4 of which carry quotations, a table of contents, and an index. Partly in two colors, with numerous statistical tables and diagrams, all done with neatness and accuracy, and evenness of touch on the whole job.

Another very attractive mimeographed report is called *Common Cents* issued by the New York Tuberculosis and Health Association with the same note that—

> This report has been prepared at our own office to save the expense of printing.

In fact the office cost of 5,000 copies is $175 against the printing cost of $350. 27 pages, 5½ by 8¾ inches; on both

sides of the sheet, which added to the production difficulties.

Miss Maier describes the very careful preparation that a mimeographed report comparable to printing must go through:

> In setting up a book of this type it is necessary that before the final copy goes to the mimeographer all re-editing, spacing, etc. be absolutely completed, and a perfect example of what the final mimeographed book will be like. I believe it was necessary to type and draw our book over six or seven times before the final version was ready—these various re-typings corresponding to the re-setting of lines, re-dummyings, etc., that would take place on printers' proofs. In this particular instance the situation was greatly complicated by the fact that the text had to run around the drawings so that in correcting "widows" and other bad makeup it was necessary to reset the whole page in order to see how far down the text then came with the drawings on the page, instead of being able merely to shift lines around as one could do when there are no drawings interfering. Then, too, such a change—say on page 5—would automatically affect pages six and seven, and since the typing had to be done on folded pages on which five would be on one side and twenty-four the opposite page, both of these leaves would also be affected by the changes.
>
> In short, as you may guess from the above, it was a very, very wearying and tedious job, and while I think the drawings greatly liven up the text, a book without them could be done in about one-fourth the time.

Hygeia for October, 1933—"Waiting for the Doctor and Making the Doctor Wait" (a cartoon); "Heart Disease—Then and Now"; "A Housewife Looks at the Committee on Foods" (of the A.M.A.); "Worm Powders" (ignorance is not always bliss); "The Curse of the Fire Spirit" (fire dangers); "The 'Demon' Housekeeper" (a symptom, not a vice); "Salvage" (reclaiming the "Polio" victim); "Should Your Child Wear Glasses?" "At a Century of Progress" (illustrations of scientific exhibits); "Wings of Death" (what quarantine does); "Safeguarding the Athlete's Health"; "Progress in Preventive Medicine" (part 8); "Training for Athletics and Health" (part 10); "The Old-Time Doctor"; "Craftsmanship in Canning"; "Sex Education" (part 4—The Teaching of Sex to the Young Child); "I Want to Know" (part 2 of "A First Physiology"); "New Books on Health"; "School and Health," including "The Passing of Half Truths in Health Education," several examples of teaching methods and materials and "New Health Books and Teachers' Materials." — *Hygeia,* 535 North Dearborn St., Chicago. Oct., 1933. *25 cents.*

A Health Education Exhibit—An exhibit which enlivened an annual meeting is described in *Public Health Nursing* for October, 1933.

The Cleveland Health and Parent Education Association made its customary methods of teaching health and care of the sick demonstration at the annual meeting to which 1,000 invitations were issued.

> We felt that our aims had been realized: we had been able, first, to interest an infinitely larger number of people than we could have done with the usual annual meeting and, second, our visitors will henceforth know what is taught in health classes and how it is taught. Furthermore, many are interested enough now to pursue health education for themselves and to interest others in doing so.—
>
> ETHEL M. HANSON, R.N.

To Editors of Health Bulletins and Magazines—An editorial writer on a metropolitan daily was persuaded by William McAndrew to read the editorial pages of over 200 educational magazines. Mr. McAndrew in a talk to the Educational Press Association of America in February, 1933, reported the conversation following his reading.

Perhaps some of us who write editorial pages need to take the conversation to heart.

"This is the worst afternoon," my victim said, "that I have had in many moons."

"What's the matter with them?" I said.

"Nothing," he replied. "That's the trouble with them. They don't matter. These chaps don't write their editorials until the last minute. Nothing worth while can come to a man the last minute. An editorial writer must be composing editorials all the time. When he hears a speech or reads one, when he glances through a magazine or, as he must to keep alive, when he reads the books of a master, he must out with pocket notebook and jot down the by-products that snap into his mind. Just as a reporter gets so that everything he sees and hears is analyzed by him for its news value, so the editor is perpetually looking for editorial ideas. He runs over the large events and finds an idea that his paper should push with vigor and punch. He digs into his memory and into his books for illustrations or arguments to enliven his theme, but his ideas flash on him everywhere. The pocket notebook, small size, with detachable leaves, is an indispensable tool of the journalist. Your editors show no sign of having any."

That's a little thick, but it seems to contain a usable idea.

For Camp, Club or Institution—You may have a group of children or adults for whom you wish ideas or inexpensive materials to provide simple entertainment or occupation, or incidental education.

An aid in that direction is "Illustrative Materials and Publications," a 5-page memorandum which explains and gives information for securing the source publications whereby you may locate a vast array of pictures, slides, motion pictures, posters, exhibits, plays, story-telling helps, etc., etc. References to specific health material are limited, but there seem to be important uses for other subjects in hospitals, sanatoria, summer camps, and elsewhere.

Reception rooms of clinics, for example, might be more attractive and restful for the occasional use of non-health material on the walls or in the slide or motion picture projector.

"Illustrative Materials and Publications" is supplied by Social Work Publicity Council, 130 East 22d St., New York, N. Y. *6 cents;* 2 or more copies, *5 cents* each.

Professionals as Volunteers—It started in this idea penned by Alma C. Haupt in *Public Health Nursing* (Aug., 1933—"Informing the Public and Money Raising"):

Even though agencies cannot employ full- or even part-time special publicity workers, they may carry the work through a publicity committee of the board, with the help of the nurse director and the staff. Every large community has writers, artists, and advertising experts who make helpful members of this committee.

To answer a query as to what local nursing agencies were making use of writers, artists, and advertising specialists, Miss Haupt wrote to 10 of the locals. Here are extracts from their replies.

"During one year we were able to have a professional person give us about one-half day a week in which she wrote letters to the newspapers, articles, etc., that would give us publicity for our service. As you know, we did not attempt through this publicity to get funds but simply to tell the community about our service."

"We have had some help from a newspaper writer on rewriting some of our newspaper stories. We have also had posters made by the students of the art department of the local high school. We have never asked aid of an advertising expert, but that might be an advisable thing to do."

"We have not had the value of writers, artists or advertising experts on our Publicity Committee since I have been in ——— but I believe that it would be desirable, provided the professional writers, artists, etc., and the remainder of the committee would work together on their projects. I recall two instances where the professional newspaper person on a V.N.A. job found it difficult to put his emphasis in the places thought important by the V.N.A. I think some V.N.A.'s labor under certain publicity inhibitions which may or may not be good for their organization, and which are quite often difficult for a professional newspaper person to understand."

"We have at present on our Publicity Com-

mittee Mr. ——— who is secretary of the ——— newspaper and a newspaper man of considerable standing, obviously. We also have Mrs. ——— who was publicity and finance secretary of a national organization before her marriage. We do not have other members who are specialists. I think the idea sounds excellent where they are available and where the board considers members outside of its own board of directors for members of the committee."

"Our publicity we believe should be headed up by some member of the Board who would draw on members of the association and community for assistance. This delegation of responsibility has not yet been done. The chairman of our Nursing Committee has been of great assistance in securing publicity for the organization, however."

"I enclose our annual report which has original illustrations to show how we used the artistic ability of one of our Association members, who is the wife of a local physician. Mrs. ——— is now making a series of five posters using stick drawings to decorate our booth at the local Exhibition, which is to be held in September. She is illustrating our Nutrition Service in a way that we think will attract attention for its humor and originality. Our exhibit is entirely on the subject of nutrition this year. We have no writers of note in ———. I wish that we did. I realize how valuable assistance from one would be. Your letter convinces me that we should reach out even farther in the coming year to find aid in publicity and attach such persons to us through membership in our association where their abilities might be drawn upon in the interest of public health nursing."

"To date we have not used professional people in these groups on our Publicity Committee. We have, however, always had board members who showed what might be called a flair for publicity on the Publicity Committee, and our Annual Report Committee has been made up of people who were particularly interested in that type of publicity. We have used professional people indirectly, as for instance securing assistance from an advertisement writer who is the husband of a Branch Committee member, and the preparation of the graphic part of the Annual Report by an artist interested in the V.N.S."

This department would be glad to report any public health agency making use of outside specialists as volunteers in health education or presentation of the work of the organization.

One way to get new people interested in what you are doing is to get them to do something for you. It does not seem necessary to get them to join or otherwise formally to align themselves with your agency before asking them to help.

On the other hand it is better, usually, not to ask any untried persons to become committee members. As a rule it is safer to get their aid on particular jobs, try them out, awaken their interest, and inform them as to what you are doing and why. An invitation to committee membership may follow.

How and where to use the outside specialist will be discussed next month.

IT MAY BE HERE

Two men meet outside the office of "Dr. Jones." One man: "Hello Jim! How are you this morning?" Other man: "I'm fine! And I *know:* I've just had my annual physical examination." This is the story told by an illustration in *Health Bulletin,* Board of Health, Brookline, Mass. Sept., 1933.

"We Got Those Kiddies in the Nick of Time" is a 4-page illustrated folder explaining the Health Restoration Camps financed by the Community Chest, Cincinnati, Ohio. Enclose *3 cents* for a sample. (But *why* did it not say "Kids"?)

"Statistics for All: The Fact Picture from Vienna is Significant Visual Aid," in *Educational Screen,* 64 E. Lake St., Chicago. Sept. 1933. *25 cents.* With 3 examples of work by Dr. Neurath. (Those who wish to work with visual education departments of schools cannot well do without this magazine.)

"A Health Education and Publicity Program" is a reprint of articles from *American Journal of Public Health,* May and June, 1929. These articles were part of the two half-day sessions in which were discussed why plan, objectives, audiences, the facts, and the approach, are almost indispensable to those doing or supervising popular

health education. Copies of the reprint *free* from Russell Sage Foundation, 130 East 22d St., New York, N. Y.

Mouth Health Quarterly, 84 S. 10th St., Minneapolis, Minn., July, 1933, contains interesting reproductions of paintings on dental subjects, and of exhibits at Century of Progress; reproductions of well done mouth hygiene posters from Great Falls, Mont., school children; "Your Child's Teeth" (radio talk); "Jack and the Chew-Chew Fairy" (mouth health story); several pages of comment on publications such as public health workers wish to know about. Special contributions have enabled the American Mouth Health Association to reduce the *Quarterly* subscription to $1.50 a year.

Another car card from the New York Tuberculosis and Health Association:

CLEANLINESS — GOOD FOOD
ADEQUATE REST — FRESH AIR
SUNSHINE — MEDICAL CARE
These help to prevent and to cure tuberculosis

The last sentence is run in red in one line across the card. Below it is Association name and address in white letters on a broad black band.

MAGAZINE ARTICLES

"The Depression and Our Health," by C. H. Gellenthien, M.D. *Kiwanis Magazine*, 520 N. Michigan Ave., Chicago, Ill. May, 1933. Interprets some mortality statistics; emphasizes possible future losses. *15 cents.*

"I Bluffed My Way to Health," by W. C. O'Connell. *Saturday Evening Post*. Oct. 7, 1933. But exercise turned the trick.

"Making the Most of Sun Rays," by W. R. Ramsey, M.D. *Farmer's Wife*, St. Paul, Minn. May, 1933.

"Stroke Your Broom," by R. C. Moore and Janet Lane. *Collier's*. Sept. 23, 1933. How to change hard work into desirable exercise.

"Traffic Crimes and Criminals," by C. Billings. *Atlantic*. Oct., 1933. Unique police prevention of automobile deaths.

"Water Cure," by M. B. Ray. *Collier's*. Sept. 2, 1933. The varied values of the bath.

BOOKS AND REPORTS

Health and Environment—*By Edgar Sydenstricker. New York: McGraw-Hill,* 1933. *Published under the direction of the President's Research Committee on Social Trends.* 210 pp. Price, $2.50.

Mr. Sydenstricker defines environment as all those circumstances and conditions which affect man's health and well-being, excepting inheritance, and his book is a discussion of as many of these as there seems to be any chance of evaluating by the methods of statistical analysis.

The book is far more than a statistical treatise. It is an epidemiological monograph in which unusual trouble has been taken by a capable and experienced worker to find explanations for statistically expressed facts and to discover whether statistics can be adduced to demonstrate certain assumed truths.

Tables of data and diagrams made from tables abound, but they seem not to have been inserted so much to prove the coördination of health with environment as to show trends which call for explanation.

A subject candidly treated, and in need of general acknowledgment, is the fact that so many social and economic factors enter into the problem of lengthening life that it is impossible to ascribe all the improvement in the conquest of disease to the efforts which have been made directly against it. Tuberculosis, for example, is helped by whatever improves the social and economic status of the individual.

Some diseases, as smallpox, diphtheria and typhoid, against which specific and effective means of preventive or curative treatments exist, have, of course, been reduced to an extent which statistical records well show. Certain industrial hazards have been eliminated or reduced, and tables are available to indicate these results.

It is interesting to see that the author declares that the span of life has not increased in recent years, although the average age today is greater than formerly. This, he explains, is due to the saving of life during infancy and adolescence.

The book is valuable for the frank and fearless way in which it deals with its subject. It deserves to be carefully studied by every health officer and epidemiologist, and should be in the library of all who wish to be well informed on public health values.

GEORGE A. SOPER

Social Planning and Adult Education—*By John W. Herring. New York: Macmillan,* 1933. 138 pp. Price, $1.25.

In a period when social planning is a pressing need, this story of group thinking and planning in Chester County, Pennsylvania, is especially welcome. The author, who was director of the county health and welfare council, describes frankly the county's effort to study itself, to evaluate its problems, and to develop constructive programs.

A social planning program was begun before the war, having been locally conceived and initiated. Later, plans were devised in conjunction with the American Association for Adult Education, to use the county for adult education. These two undertakings were merged in 1929, the resulting project having three chief characteristics: (1)

county social planning, (2) the use of the county unit in adult education, and (3) the conscious use of adult education in making and carrying out a social plan. The movement "conceives, in a nutshell, that planning, the most comprehensive of social tasks, should be undertaken with education, the most effective of tools."

Consideration is given to both the successes and failures of the projects undertaken. There is much philosophy written around certain of the projects. Those engaged in county health and welfare work will find suggestions worthy of study. IRA V. HISCOCK

Water Pageants, Games and Stunts—*By Olive McCormick. Philadelphia: Barnes,* 1933. 138 pp. Price, $2.00.

This new and very interesting book with a foreword by Commodore Longfellow presents, not only to the beginner in pageant work but to the expert, a number of new and novel suggestions on water pageants.

Chapters are also found on costuming, make-up, music, scenery and lighting, how to write a water pageant, swimming formations, stunts, games and canoe regattas and a complete write-up of seven other pageants.

The organization of the material is to be commended. It logically presents the "how" of preparing such exhibitions and demonstrations and would be very helpful to those in camps and to people who are doing indoor swimming pool work where demonstrations are used for propaganda purposes. HELEN COX

The Control of Football Injuries—*By Marvin A. Stevins, M.D., and Winthrop M. Phelps, M.D. New York: Barnes,* 1933. Price, $3.00.

This very interesting and instructive work which grew out of the criticism of the game of football and its associated injuries is well worth careful study by anyone having any connection with an athletic organization. While it is primarily a detailed consideration of football injuries, their prevention and treatment, a great deal of the material can be applied to all other branches of sports and even to ordinary civilian practices and injuries.

The reviewer found a great deal of interest in the first chapter, which is concerned with training and physical equipment. Apparently Yale University has an adequate financial rating to carry out an almost ideal training system, which smaller colleges may find difficult; but in general, the principles laid down can be followed in any institution devoting a fair amount of attention and energy to sports.

Many of the chapters are devoted to a detailed consideration of all injuries possible, the greater majority of which never occur, and when they do, are usually competently handled.

Many doctors, who have been interested in sports, either as spectators or as medical advisors, have been distressed by the large number of preventable injuries and needless recurrences of those at certain typical points —knees, ankles, and shoulders. The time lost both from the standpoint of the team and the individual player reaches an enormous figure during a season. Everyone who reads this book will be impressed with the clear, concise exposition of the production of an injury, its prevention, and its treatment, and thus gain a more adequate conception of the control of football injuries.

The last portion of the book is devoted to the tabulation of the individual fatalities of the year 1931. The collegiate and high school fatalities indicate the advantage of competent medical supervision of the players, for in the sand-lot and unclassified group there are noted several instances where

delayed hospitalization and medical treatment might be considered as contributory to the fatal outcome.

The book is profusely illustrated with photographs showing certain definite mechanisms for producing typical injuries which should be instructive to any coach or trainer. The keynote of prevention of injuries is felt throughout the work and is in harmony with every phase of modern medicine and public health. WILLIAM J. STEWART

Procedures in Tuberculosis Control for the Dispensary, Home and Sanatorium—*By Benjamin Goldberg with a chapter on Sanatorium Planning by Thomas B. Kidner, and an Introduction by David J. Davis. Philadelphia: Davis,* 1933. 373 pp.

The author, as Dr. Davis says, has seen fit to analyze and criticise various methods, procedures, and institutions evaluating them chiefly in terms of control. The book is divided into three sections. The first deals with the general problem, legislation, and the dispensary, to which most space is devoted. Here are to be found many suggestions concerning records, charts, dental clinics, valuable for those engaged in such endeavors. The second section discusses home treatment and the third the sanatorium.

Individual plans must be fitted to the needs of the individual city. The importance of the negro and Mexican problem in relation to tuberculosis is discussed. From figures given, the author estimates that there are 10 times as many patients with tuberculosis as there are beds available, which emphasizes the present importance of home treatment. The danger of the open case for the children in the household is stressed and attention called to the fact that in Chicago the number of these cases has been reduced to a minimum. Legislation is divided into enabling and coercive.

Throughout the book the need of coöperation with and protection of medical men is urged. Plans, personnel, and routine of the dispensary, education and publicity are freely discussed. Recognizing that the majority of patients sooner or later must be submitted to home treatment, details as to how this can be managed through the clinic are given. Following a detailed description of how a sanatorium should be conducted in the interest of public health, a helpful bibliography for those interested in the control of tuberculosis, as well as an index is given.

The book will prove to be a valuable help to all workers in tuberculosis for it covers many subjects that ordinarily are to be found only after much search scattered in many journals. It should be at hand for reference for all workers in tuberculosis. LAWRASON BROWN

Proceedings of Southern Branch of the American Public Heath Association, Held at Birmingham, Alabama, November 14, 15, 16, 1932. *New York: American Public Health Association,* 1933. 100 pp. Price, $.50.

The Southern Branch of the American Public Health Association was founded November 14, 1932. It has published here the proceedings containing its minutes, Constitution and By-Laws, and the papers read. The Western Branch submits its papers to the *American Journal of Public Health,* and then sends those which cannot be published in that *Journal* to other magazines which wish them.

The papers read were of excellent quality, and almost all of them had special reference to problems found in the southern section of our country, though some of them are of general application. We note particularly the paper by Dr. Leon C. Havens on the detection of typhoid carriers, which is characteristically accurate and shows

the quality of mind for which he was noted. His death since the meeting is a cause of regret to every member of the Association.

This volume possesses a value on its own account in addition to being the first publication by the Southern Branch. We have no doubt that the high standard set will be continued at future meetings.

MAZŸCK P. RAVENEL

What Shall I Eat?—*By Edith M. Barber. New York: Macmillan,* 1933. 106 pp. Price, $1.75.

The author, lecturer on history of cookery, Household Arts Department, Teachers College, Columbia University, has written here a clear and comprehensive explanation of the uses of food to man. The facts are stated simply enough to be understood by persons not versed in the fields of science.

If every one could read the chapters on "Those Diet Fads" and "Those Food Prejudices," general conversation regarding these everyday topics would be materially changed.

Common sense menus are given for the ordinary daily diet, reducing diet, business man's or woman's diet, and weekly menus for a family of 5 at different cost levels. Changes which can be made and still meet the requirements of an adequate diet are noted.

This book is written in a humorous vein and should meet the needs of home folks, women's clubs, etc., as well as students and teachers of cookery.

BESS EXTON

Dictionary for Nurses—*2d ed. Compiled by Lois Oakes. Philadelphia: Reilly,* 1933. 351 pp. Price, $1.00.

While Miss Oakes has supplemented the dictionary of medical terms in this small book with several tables meant to increase its usefulness, it still does not seem to be comprehensive enough to be adequate for general use.

A table of calorific values of foods lists only 9 articles of diet: three tables for infant feeding are given without any qualifying statement such as is found in our government bulletins, that all artificial feeding should be under the direction of a doctor.

The 4-page list of abbreviations of British degrees and diplomas would be of only occasional interest.

ALVA ANSTEAD

Nutrition—*By Graham Lusk. New York: Hoeber,* 1933. 142 pp. Price, $1.50.

In the pages of history the aspirant to knowledge finds revelation and learns wisdom. In this, the tenth in the interesting series of primers on the history of medicine, he will find the narrative of the development of nutritional chemistry. He will not find the story of modern dietetics, but he will learn its important background.

Graham Lusk, eminent authority on physiology and biochemistry, completed the manuscript of this little book a few weeks before his recent death. In it he has presented in chronological order the events which led to the establishment of the newer knowledge of nutrition, and he has described with skill and perception, and often from personal experience, the men who have contributed most to the chemistry of foods.

The book is well printed, has 13 illustrations, and a good index, and it will prove of interest to all who seek to delve into the historical background of such a significant topic as human nutrition. JAMES A. TOBEY

Milk, the Indispensable Food—*By James A. Tobey. Milwaukee: Olsen Publishing Co.,* 1933. 200 pp. Price, $2.25.

This book presents a number of essays which describe in a popular manner the many good qualities of milk and dairy products. The book is in-

terestingly written and conforms to Dr. Tobey's best style.

Essentially, the details are correct and the views maintained are modern and backed by ample authority. Use is made of the unusual and the out-of-the-way to stress certain points and to keep up interest. The popular presentation of the results of many nutrition experiments is particularly well done and brings constantly before the reader the indispensability of milk to the welfare of man. Some repetitions occur; and a very few errors.

The book can be heartily recommended to anyone who is desirous of learning something of the most interesting story of milk. Like milk, this book is easily digested and should be fully prescribed by all whose interests are in better health. C. R. FELLERS

Children's Sleep—*By Samuel Renshaw, Vernon L. Miller, and Dorothy P. Marquis. New York: Macmillan,* 1933. 242 pp. Price, $2.00.

This is an interesting report of a series of studies on the influence of motion pictures and coffee on children's sleep, on the effects of loss of sleep, and on the critical frequency limen for visual flicker in children.

In making the study, the sleep movements of 170 children of both sexes, ages 6 to 18 years, were recorded during 347 nights. These children, in groups of 20, slept in single beds, each fitted with an electrical device which recorded the changes in posture made by the sleeper, minute by minute, throughout each night. The records of the study include a total of 3,591,000 minutes of sleep. Children of the Ohio State Bureau of Juvenile Research at Columbus were used as subjects. It was felt that these children represented a fair sampling of an average child population and that the regularity of living conditions at the bureau favored the general applicability of conclusions based upon the experimental results.

To study the influence of motion pictures upon the sleep of children, successive groups of children were shown 58 different motion picture programs in the evenings before retiring. Increases in motility ranged from 0 to over 90 per cent. On the average, boys showed about 26 per cent and girls about 14 per cent greater hourly motility after movies than in normal sleep. The changes in motility were greatest in the fore-part of the night, when sleep normally is at its maximum. Children below 10 years of age were less influenced than the older children, the maximum effect occurring at about the age of puberty.

In studying the effect of coffee on children's sleep, it was found that coffee, in so far as motility is taken as an index, does not have the consistent detrimental effect on sleep that it is generally assumed to have. For some children coffee affected the sleep motility during the first 1 to 3 hours of sleep, for others during the middle of the night, and for a few it seems to raise or lower the general level of the motility curve throughout the night. Individual differences were so great that it was impossible to make general statements regarding its effect on children of the same sex or age.

An interesting section of the book is devoted to a study of the effects of loss of sleep on children. It was found that the effects of loss of sleep in children, where the deprivation has amounted to one-third of the normal ration, extended into several nights and that a single night is not sufficient for complete recovery.

The final chapter considers the problem of whether the intermittent illumination of the screen gives a flicker which induces eye-strain and nervousness in children attending a motion picture. Some interesting conclusions are herewith drawn.

Although this is a report of a series of experiments, it is given in a very interesting manner and will prove well worth the reading. It leads the reader to look forward to the final report of the larger and related group of investigations of the influence on children of motion pictures and their social potentialities, sponsored by the Payne Fund of New York.

ELDRED V. THIEHOFF

The Common Cold—*By David Thomson and Robert Thomson. London: Baillière, Tindall and Cox,* 1932. 738 pp. Price, $15.00.

This consists of a monumental compilation of the world literature dealing with various aspects of inflammatory disease of the upper respiratory tract. The volume is a large one containing 738 pages and many excellent plates. Workers in the field find it the best reference book extant on the subject of colds. Its size will naturally limit its employment by the casual reader.

It is unavoidable that a work of this kind should suffer from a lack of continuity and consistency, in spite of the efforts of the authors to arbitrate conflicting points of view and to inject into the subject a critique based on personal bacteriological investigations.

It seems unfortunate that so much space should be devoted to a laborious description of the bacteria encountered in the upper respiratory tract at a time when the cultural and morphological changes encountered in bacterial dissociation are common knowledge. The authors seem rather reluctant to abandon their preconceived ideas as to the primary importance of these bacteria as the inciting agent of colds. Evidence is rapidly accumulating to support the hypothesis that filtrable agents are usually the factors of primary importance, and the rôle of bacteria is that of secondary invader of tissue previously damaged. The recent cultivation of such filtrable agents by Dochez and his coworkers demonstrates beyond question their existence, while the marked variation of bacteriological findings in the nasal secretions during a single outbreak of coryza points strongly against the etiological significance of ordinary microörganisms.

It is of little importance if the personal views of the authors do not meet universal acceptance. The style, the care and accuracy, and the thoroughness with which such a mass of knowledge has been organized and abstracted excites the reader to unbounded admiration.

FRANKLIN M. HANGER

Selected Recreational Sports (for Girls and Women)—*By Julia H. Post and Mabel J. Shirley. New York: Barnes,* 1933. 127 pp. Price, $2.00.

The New Deal offers more leisure time. The machine age brings in its wake shorter working hours and the problem—what are we going to do with this time? Our educational program has neglected to prepare us to meet the situation adequately and this book offers some helpful suggestions.

The activities presented in the volume require little equipment at a minimum cost for small groups. Although the volume was prepared for girls and women the material presented is also adapted to boys and men or mixed groups.

The following sports are presented: deck tennis, horse shoe pitching, badminton, table tennis, shuffleboard, clock golf, paddle tennis, and tetherball. Suggestions for the organization of a sports program, the care and sources of equipment, and diagrams for setting up play areas for these sports are given.

The book is well worth while and should find a useful place in the home, at the club, in the school, at the playground or wherever sports of this type have a place.

HUBERT E. BROWN

Abderhalden's Handbuch der Biologischen Arbeitsmethoden — *Vol. XIII, Book 2, No. 8. Berlin & Vienna: Urban & Schwarzenberg,* 1933. *Article 1—Auswertungsmethoden für Pockenlymphen und Pockensera, by Stravros Zurukzoglu,* pp. 1141–1190, 12 figs. *Article 2—Das Anaphylatoxin, by E. Friedberger and J. Weissfeiler,* pp. 1191–1242, 3 figs. Price, M. 5.80.

The first article in this instalment of Abderhalden's handbook of biological technic is a comprehensive survey of the evaluation of smallpox vaccine and vaccinia antisera.

After a short discussion of the fundamental principles, the author describes the various methods of testing the potency of smallpox vaccine on human subjects, calves and rabbits. Complete details are given of the methods approved by the smallpox commission of the League of Nations. These comprise the technics of Gins, Groth, Sobernheim and Calmette-Guerin, under the latter method being considered its modifications including that of Force and Leake.

A section follows on the testing of dry lymph and a suggestion is made that governmental agencies concerned with the supervision of biologic products should maintain a standard dry lymph with which could be compared samples from producing establishments. The next section lists the countries officially testing their vaccines and the methods used.

The testing of vaccinia antisera is discussed in a similar manner. In view of the fact that vaccinia immune serum has been used in the treatment of the encephalitis following vaccination, the author amplifies a suggestion made by Groth in 1930 to the effect that such sera should be prepared, standardized in terms of neutralizing units, and made available for emergency use.

In an appendix are assembled certain Prussian orders and circulars dealing with the testing of smallpox vaccine and the treatment of encephalitis following vaccination. There is a rather complete bibliography. JOHN N. FORCE

In the second article the authors review only the more fundamental papers in this field, which still awaits satisfactory clarification. They define anaphylatoxin, using this name in lieu of serotoxin of Doerr, Jobling and Petersen, and Wells, or proteotoxin of Zinsser and Dwyer. The technics of Novy and Kruif and of Friedberger are described, and the antigen-antibody-complement reaction *in vitro* is described. The methods of demonstrating anaphylatoxins without specific antibodies and by Abderhalden's reaction, with bacteria and with trypanosomes, with animal bacteria with plasma instead of serum, *in vivo,* from toxins, and from peptone, are described. The physico-chemical and the biological characteristics of anaphylatoxin are reviewed and their action on isolated organs of sensitized animals is described. Toxicity is acquired by serum after centrifuging out an admixture with kaolin, after exposure to minimal amounts of agar, after mixing with starch paste which leaves in suspension in the serum colloidal starch particles, after shaking with chloroform or ether, and after dilution with distilled water. Various theories of the source and method of origin and the chemical nature of anaphylatoxin are enumerated but none are free from difficulties. The authors express the hope that this review of the problems, largely still unsolved, of anaphylatoxins will stimulate efforts to solve them.

C. A. KOFOID

The First Two Years: A Study of Twenty-Five Babies. Volume II—Intellectual Development — *By Mary M. Shirley. Minneapolis:*

University of Minnesota Press, 1933. 513 pp. Price, $3.00.

A study of the development of 25 babies during the first 2 years of life has been made. Volume II gives a detailed account of the intellectual development. Volume I, published in 1931, considered the postural and locomotor development. Volume III, to be published in 1933, will take up manifestations of the development of personality. This study is interesting in that it consists of weekly observations or tests made in the homes instead of in a laboratory.

This volume is divided into 3 parts:

Part I reports on the sequence of development in:

(1) Eye coördination; (2) Fine motor skills; (3) Speech; (4) Social habits; (5) Comprehension.

Part II gives detailed descriptions of the methods of examining or testing the babies.

Part III attempts to summarize all of the bits of behavior developed into a meaningful whole. Here the author concludes that behavior development follows a consistent sequence in all babies and that this development proceeds in harmony with biological laws.

The book is well written, and the material is presented in an interesting manner. ELDRED V. THIEHOFF

The Tides of Life: The Endocrine Glands in Bodily Adjustment—*By R. S. Hoskins. New York: Norton,* 1933. 352 pp. Price, $3.50.

In view of the marked interest of the public in the progress in endocrinology and because of the many spurious claims made by those who are seeking to use this interest as a means of personal gain, this volume is a most valuable addition to the library of the intelligent layman. The book is doubly valuable because of the author's investigation in this field of physiology. He does not try to discuss the technical details of the subject which in a volume written essentially for lay consumption would be out of place. The facts are given in non-technical language and where technical terms are used, full explanation is given.

The subject matter is discussed first from the standpoint of the hormones in general as the chemical regulators of the body, with a brief history of the growth of the subject. Following this the author takes up the various glands in order with their function and their relationship to each other as far as is known at the present time.

Besides devoting considerable space to some of the more recent developments in our knowledge of the sexual functions, the author also discusses endocrine dysfunctions such as diabetes, and the motor and secretory functions of the digestive tract which are not generally treated of in textbooks on endocrinology.

The book is well written and should appeal to a large group of the intelligent population.

MAZŸCK P. RAVENEL

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

The Ups and Downs of Rheumatic Fever—The declines in incidence of rheumatic fever seen in certain New York hospitals from 1897 to 1919 and its increase since then is discussed from the angles of foci of infection, cycles of virulence, rainfall and economic conditions.

DAVIS, J. S. Incidence of Rheumatic Fever in New York City Hospitals. Am. J. M. Sc. 186, 2:180 (Aug.), 1933.

More About Dental Caries—Is tooth enamel a vital substance? It appears to increase in hardness, it is stainable, calcium seems to be extracted in pregnancy, but the author presents evidence which suggests that enamel is an inert substance. The corollary offered is that we must combat caries by protecting the enamel from plaques of fermenting carbohydrates.

FLETCHER, J. Dental Enamel: Is It a Vital Tissue? Pub. Health 45, 12:396 (Sept.), 1933.

How to Stop Outbreaks of Food Poisoning—Prevention of food poisoning is proposed through three channels —supervision of food handlers, more complete food inspection service, and popular education in the means of avoiding dangerous foods.

GEIGER, J. C. and GRAY, J. P. Food Poisoning. J.A.M.A. 101, 13:975 (Sept. 23), 1933.

Advances (?) in Cancer Control—"No marked progress has been made in instituting surgical treatment in the course of malignant disease of the breast. The present clinical methods are inadequate to detect malignancy until it is fairly well advanced." This gloomy beginning to the summary of an excellent paper on cancer of the breast emanating from the Mayo Clinic would provide food for thought for health workers.

HARRINGTON, S. W. Diagnosis and Treatment of Lesions of the Breast. Am. J. Cancer 19, 1:56 (Sept.), 1933.

Tonsillectomy and Immunity—Tonsillectomy has no marked effect on the susceptibility to scarlet fever within 6 months, conclude the authors who Dick-tested the tonsillectomized children "before and after."

KERESZTURI, C. and PARK, W. H. Effect of Tonsillectomy on the Development of Immunity to Scarlet Fever. J.A.M.A. 101, 10: 764 (Sept. 2), 1933.

Finding Tuberculosis in Children—Clearly presented is this outline of the program for detecting tuberculosis in childhood, which the author concludes is well worth the effort, difficult as it is. The details of this community case-finding program are set forth in a committee report published this month by the National Tuberculosis Association entitled "Procedure for the Discovery and Care of Tuberculous Children." An eminently sound proposal which should be known to all health workers.

KLEINSCHMIDT, H. E. Tuberculosis in School Children. Pub. Health Nurs. 25, 9:474 (Sept.), 1933.

How to Overcome Fatigue—This exposition of the physiology of sleep is so readily comprehensible that it seems much too clear and plausible to be entirely true. Its lesson should be taken to heart by all workers in health.

LAIRD, D. A. Fatigue. Am. J. Nurs. 33, 9:835 (Sept.), 1933.

When Children Grow—Statistically significant differences in annual weight increments are observed in young children living under normal conditions. In

this 8-year study, 1924 was a poor year while 1926 was the best. Guessing the reasons should prove a fertile field for cogitation.

PALMER, C. E. Variations of Growth in Weight of Elementary School Children, 1921-1928. Pub. Health Rep. 48, 33:993 (Aug. 18), 1933.

Pros and Cons of Poliomyelitis Prophylaxis—Balance and tolerance mark this discussion of the prophylactic treatment of poliomyelitis cases. Although there is no proof of the efficacy of adult and convalescent sera after the manifestations of the preparalytic stage, we should not be deterred from further attempts to help cases with antisera.

WESSELHOEFT, C. The Present Status of Serum Treatment in Acute Poliomyelitis. J. Pediatrics 3, 2:330 (Aug.), 1933.

Will Sterilization Prevent Mental Deficiency?—Casting doubts on many of the benefits that proponents claim will follow sterilization of mental defectives is a favorite sport. These doubts are well cast in so far as most of the named premises and conclusions are concerned.

TURNER, F. D. Mental Deficiency and Sterilization. Med. Off. 50, 12:121 (Sept. 16), 1933.

BOOKS RECEIVED

BEHIND THE DOCTOR. By Logan Clendening. New York: Knopf, 1933. 670 pp. Price, $3.75.

OBSTETRICAL NURSING. Third edition. By Carolyn Conant Van Blarcom. New York: Macmillan, 1933. 651 pp. Price, $3.00.

REPORT TO THE UNITED STATES GOVERNMENT ON TUBERCULOSIS WITH SOME THERAPEUTIC AND PROPHYLACTIC SUGGESTIONS. By S. Adolphus Knopf. New York: National Tuberculosis Association, 1933. 59 pp. Price, $1.15.

THE VISUAL FATIGUE OF MOTION PICTURES. A World-Wide Summary and Survey. Compiled and Edited by Aaron E. Singer. New York: Amusement Age Publishing Co., 1933. 48 pp. Price, $1.00.

I GO NURSING. By Corinne Johnson Kern. New York: Dutton, 1933. 256 pp. Price, $2.50.

HYPO-CHLORINATION OF WATER. A New Answer to Some Old Problems. By Walter L. Savell. New York: Mathieson Alkali Works, 1933. 72 pp. Free.

THE GREAT DOCTORS. A Biographical History of Medicine. By Henry E. Sigerist. New York: Norton, 1933. 436 pp. Price, $4.00.

A SHORT HISTORY OF DENTISTRY. By Lilian Lindsay. London: John Bale, Sons and Danielsson, Ltd., 1933. 88 pp. Price, $1.25.

CHILDREN'S SLEEP. Motion Pictures and Youth Series. By Samuel Renshaw, Vernon L. Miller, and Dorothy P. Marquis. New York: Macmillan, 1933. 242 pp. Price, $2.00.

OUR MOVIE MADE CHILDREN. By Henry James Forman. New York: Macmillan, 1933. 288 pp. Price, $2.50.

A PRACTICAL MEDICAL DICTIONARY. 12th ed., rev. By Thomas Lathrop Stedman. Baltimore: Wood, 1933. 1256 pp., illustrated. Price, $7.00. Thumb indexed, $7.50.

A SOCIOLOGIC SCORE SYSTEM FOR THE CARE AND TRAINING OF CHILDREN. 11th ed., rev. By G. Hardy Clark. Long Beach, Calif.: Seaside Printing Co., 1933. 78 pp.

FOOD, NUTRITION AND HEALTH. 3rd ed., rewritten. By E. V. McCollum and J. Ernestine Becker. Baltimore: published by the authors, 1933. 146 pp. Price, $1.50.

LET'S OPERATE. By Roy H. McKay and Norman Beasley. New York: Long & Smith, 1933. 361 pp. Price, $3.00.

BUSY CHILDHOOD. By Josephine C. Foster. New York: Appleton-Century, 1933. 303 pp. Price, $2.50.

HAPPY CHILDHOOD. By John E. Anderson. New York: Appleton-Century, 1933. 321 pp. Price, $2.50.

HEALTHY CHILDHOOD. By Harold C. Stuart. New York: Appleton-Century, 1933. 393 pp. Price, $2.50.

A STUDY OF RURAL PUBLIC HEALTH SERVICE. Edited by Allen W. Freeman. New York: The Commonwealth Fund, 1933. 236 pp. Price, $2.50.

THE INSTITUTE FOR CHILD GUIDANCE, 1927-1933. By Lawson G. Lowrey and Geddes Smith. New York: The Commonwealth Fund, 1933. 116 pp.

NEWS FROM THE FIELD

NATIONAL CAMPAIGN RALLY FOR PRIVATELY SUPPORTED WELFARE WORK IN CHICAGO

OCTOBER 30 was the day set for the national campaign rally in Chicago of all communities raising funds for welfare work. One hundred and two cities between that date and November 20 will go out to raise $53,651,210, according to an announcement made by Newton D. Baker, chairman of the 1933 Mobilization for Human Needs.

Large cities putting in welfare campaigns within this period are Chicago, Ill., with a goal of $4,000,000; Cleveland, Ohio, $3,985,000; Detroit, Mich., $3,000,000; Kansas City, Mo., $1,300,000; Los Angeles, $2,954,648, and San Francisco, Calif., $1,945,000; Minneapolis, Minn., $1,650,000; Philadelphia, $6,000,000, and Pittsburgh, Pa., $2,500,000; New York, N. Y., $8,600,000.

Mrs. Franklin D. Roosevelt, chairman of the National Women's Committee of the Mobilization, will preside at two of the large sessions.

Speakers on the program include Mrs. Franklin D. Roosevelt, Miss Jane Addams, Newton D. Baker, Harry L. Hopkins, Federal Relief Administrator, and John Stewart Bryan, president of Community Chests and Councils.

ANNUAL SAFETY CONGRESS

SOME 5,000 safety delegates met in Chicago early in October at their 22nd Annual Safety Congress and Exposition to formulate plans for the prevention of accidents in all fields during the coming year.

The following officers of the National Safety Council were elected during the Congress:

President, John E. Long, The Delaware and Hudson Railroad Corporation, Albany, N. Y. *Managing Director,* W. H. Cameron, Chicago, Ill. *Treasurer,* W. E. Worth, International Harvester Co., Chicago, Ill.

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES

AT the annual meeting of the Association of Military Surgeons of the United States, held in Chicago September 25–27, Major General Harry L. Gilchrist, of the U. S. Army, was elected President. He will assume office as President of the Association January 16, 1934.

WELLCOME PRIZE AND MEDAL

THE Wellcome Prize, consisting of $500 and a gold medal, for 1933 was awarded to Major Edgar Erskine Hume, F.A.P.H.A., Librarian of the Army Medical Library, Medical Corps, U. S. Army, for his essay "The Value of Studies in Health and Sanitation in War Planning."

CONNECTICUT PUBLIC HEALTH ASSOCIATION

THE Connecticut Public Health Association met on September 28, in Charlotte Hungerford Hospital, Torrington, Conn., where some interesting papers were presented. The attandance was 230, and the state was widely represented. Dr. Buck, of the A.P.H.A., spoke on the Chamber of Commerce Health Conservation Contest.

NATIONAL NEGRO HEALTH WEEK CONFERENCE

THE Annual Conference of the National Negro Health Week, sponsored by the National Negro Health Movement, was held October 25

in the auditorium of the new building of the U. S. Public Health Service, Washington, D. C.

NEW YORK SEWAGE WORKS ASSOCIATION

THE New York State Sewage Works Association had its fall meeting at White Plains, N. Y., October 27–28. Papers were read by Lawrence Luther, W. J. Scott and W. W. Young.

HEATING AND VENTILATING EXPOSITION

THE Third International Heating and Ventilating Exposition sponsored by the American Society of Heating and Ventilating Engineers, is to be held at Grand Central Palace in New York, February 5–9, 1934.

Air-conditioning will be especially featured, as will refrigeration in its relation to the conditioning process and equipment.

DEATH

J. WALDO SMITH, member A.P.H.A., noted consulting engineer who built New York City's $185,000,000 Catskill water supply system, died October 14. He was 72 years old. He was well known for the construction of a 14-foot tunnel under the Hudson River, through granite at 1,114 feet under sea level, to complete the aqueduct for bringing water into the city from the mountains.

PERSONALS

MINNIE STROBEL, member A.P.H.A., has resigned as secretary of the Missouri Public Health Association. Ross L. Laybourn will serve as secretary.

DR. MAYSIL M. WILLIAMS, member A.P.H.A., formerly director of the division of child hygiene in the North Dakota State Department of Public Health, has been appointed State Health Officer. She succeeds Dr. Arthur A. Whittemore, member A.P.H.A. The appointment was made by the Public Health Advisory Council, a new body created by recent legislation.

DR. W. W. COUNCIL, member A.P.H.A., of Juneau, Alaska, has been appointed Health Commissioner of the Territory of Alaska, succeeding Dr. Harry C. DeVighne.

CONFERENCES

November 3, Mid-year Meeting of the New York State Association of Public Health Laboratories, Albany, N. Y.

November 13, Southern Branch, A.P.H.A., Richmond Va.

November 14–18, Southern Medical Association, Richmond, Va.

February 5–9, 1934, Third International Heating and Ventilating Exposition, Grand Central Palace, New York, N. Y.

Spring, 1934, Statistical Conference, International Statistical Institute, London, England.

March 29, 30, 1934, Annual Meeting of the American Association of Pathologists and Bacteriologists, Toronto, Ont., Canada.

April, 1934, Southeastern Section, American Water Works Association, Augusta, Ga.

May 9–12, 1934. Sixty-sixth Annual Meeting of the Dental Society of the State of New York, Buffalo, N. Y.

July 24–31, 1934. Fourth International Congress of Radiology, Zurich, Switzerland.

1935, International Congress on Mental Hygiene, Paris.

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